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MECHANICAL ENGINEERING

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FEBRUARY 1920

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Coming Section Meetings

Atlanta Section.

February 24: At the Georgia School of Technology.

Subject: Building a 30,000-kw. Turbo-Generator Set, by H. E. Bussey. Motion-picture lecture or lantern slides.

Baltimore Section.

February 11: The Development of Long-Distance Electric Power Transmission, by P. M. Lincoln, Consulting Engineer, Cleveland, O.

February 18: The Purchase and Erection of Engineering Equipment, by A. S. Loizeaux, Electrical Engineer, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

February 25: City Planning and Its Relation to Municipal Development, by Nelson P. Lewis, Chief Engineer, Board of Estimate and Apportionment, New York City.

These three lectures, which are to be given in connection with the J. E. Aldred course on engineering practice, will be held on Wednesday afternoons at 4.15 o'clock on the dates given, in the auditorium of the Civil Engineering Building of the Johns Hopkins University.

Boston Section.

February 3: At the Boston City Club at 6.30 p.m. Dinner meeting of A.S.M.E. with A.I.E.E.

Subject: Large Turbo-Generator Units from the Operator's Standpoint. Farley Osgood, Vice President of the Public Service Electric Co., of Newark, N. J., will open discussion; twelve collaborators to follow. Tickets for dinner and meeting, $2.00.

Buffalo Section.

February 24: At the Ellicott Club, 10th floor, Ellicott Square Building.

Subject: Wage Payment, by A. L. De Leeuw.

Cincinnati Section.

February 19: At the Engineers' Club. Joint meeting with members of Engineers' Club of Cincinnati.

Subject: The Engineer and the Markets of the World, by Dean Herman Schneider, University of Cincinnati.

Cleveland Section.

February 14: In the room of the Cleveland Engineering Society, Roof Garden, Hotel Statler, 8 p.m.

Subject: Photographing the Sound of Heavy Rifles at Sandy Hook, by Dr. Dayton C. Miller, Case School of Applied Science, Cleveland, O.

Luncheons are served daily to members and guests (ladies invited) in the dining rooms of the Cleveland Engineering Society, Roof Garden, Hotel Statler.

Eastern New York.

February 20: At the Edison Club Hall, Schenectady, N. Y.

Subject: Performance Tests on Aeroplanes, by A. R. Stevenson, Jr.; and Supercharger for Aeroplane Engines, by S. A. Moss.

Erie Section.

Mid-February: At the Board of Commerce Building, Erie. Speaker: Dr. Ira N. Hollis. Subject to be announced.

Minnesota Section.

February: Subject: Coals and Coal Analysis, by W. D. Langtry, Commercial Testing & Engrg. Co., of Chicago, Ill. Time and place will be announced later.

New Orleans Section.

February 9: At the Louisiana Engineering Society. Subject to be announced.

New York Section.

February 10: At the Engineering Societies Building. Subject: New Uses of Aluminum.

Philadelphia Section.

February 24: At the Philadelphia Engineers' Club. Navy Night.

Subject: War Time Naval Engineering, by Comdr. J. S. Evans, U. S. N., Bureau of Steam Engineering, Washington, D. C.

St. Louis Section.

February 20: At the Midland Valley Country Club, dinner meeting.

Subject: Industrial Fatigue, by C. B. Lord, Mechanical Engineer, Wagner Electric Co.

San Francisco Section.

February 5: At the San Francisco Engineers' Club. Dean Kimball will speak. Subject to be announced.

SOCIETY AFFAIRS

Secretary's Letter—Three Presidents at Worcester—Washington Award to Herbert Hoover—Section Meetings—N. Y. Section Discusses New Fuel Uses—Functions of Engineering Societies in Industries—Personals—Necrology—Employment Bulletin—Candidates for Membership

Service vs. Professional Standing

THE SECRETARY'S LETTER

IN the recent numbers of *Enginering* (London) announcement is made by the Institution of Civil Engineers in the advertising columns of the intention on the part of the Institution to extend its charter by application to Parliament so that it may have the further powers of registering civil engineers and prescribing those persons entitled to be registered to practice the profession of civil engineering.

This is the most important step taken in engineering circles during the month. In England (perhaps more than any other country except possibly in France) the professional standing of an engineer has been more or less determined according to whether he was a member of the Institution—or in France of the Société: There naturally has been a similar inclination in this country to regard membership in one of the national engineering societies as a badge of professional attainment.

On the other hand, there is a fundamental note about which the Secretary commented in last month's letter, not only running through all the professions of America as is evidenced by the Interprofessional Conference, but common to all business in our beloved United States of America, and that is, that the only badge is one's ability to serve his fellow-men. This does not mean we should not have similar safeguards in engineering to those we find in medicine and law. The motive that should actuate us, however, is our desire to render service to one's society and to one's profession and through them to the community.

In this spirit the Secretary is undertaking to bring the Society into contact with the technical features of national and international movements. This month he has attended the conference of the representatives of all the professional employment services in the United States. The extent to which this service is growing in our own immediate joint society activity is remarkable. On the average, during the past few days over 150 professional men have been calling per day. It is customary to give each man individual attention, to secure a personal estimate on the part of the interviewer as well as a written statement of the attainments and personality of the applicant, and in a similar manner assist employers to secure the right talent. There is a very great ambition on the part of the boards of management of the national societies to continue this service free, that is, include it in one's dues to his society. During the war we felt that members would consider it a privilege to have their dues expended in rendering this service to returning soldiers. As soldiers were still arriving in January, some of them professional men, they will be calling for employment service for the first time as much as six or eight months from the date of demobilization, and it is apparent that if we are to continue this service we have started we shall be confronted by a heavy expense for the greater part of this year. Your Secretary, from what he can learn, would caution thrift in the most intelligent and patriotic—man, woman, and child—as the only way to meet the serious condition which will prevail in the United States during the next few months, and if this is practised consistently and uniformly such restrictions as are sure to come will be less burdensome and last for a shorter period of time. On the other hand, the employment service is destined to be taxed, but it would seem as if this was a most essential activity for the National Engineering Societies to maintain. The greatest coöperation has been pledged by your Secretary (who is the chairman of the joint board of the secretaries of the Founder Societies) to the other professional employment services of the United States.

On January 23 was held the first meeting in the history of the engineering profession in the United States, of the Boards of Management of the several societies jointly with the Trustees of the United Engineering Society and the members of Engineering Council. The greatest good will come from this conference in furthering the solidarity of the profession.

THE DEPARTMENT OF PUBLIC WORKS

The conference in Washington on January 13 and 14 of the representatives of nearly 150 societies and business and social organizations was most fruitful. It has been explained that the proposition is to convert the existing department (the Department of the Interior) into a Department of Public Works instead of creating a new department, and so to concentrate the number of Bureaus of the Government now handling these public works. Consequently the rapidity by which this movement can be made successful, depends on the ability of the engineers, now leading, to establish their sincerity and unselfishness. Nothing has so contributed to the possibility of the solidarity of the professional technical men and their association with the civic bodies of the nation as has this one thing.

Like all movements it required the most intimate coöperation of every society, business, civic and technical organization, and the necessary financial support for possibilities of publicity and direction. It is hoped that every one who reads this letter will feel obligated to immediately call up the officer of his local organization, whatever it may be, and offer to assist in the movement. Ours is almost the only important nation which has not already concentrated its public works into one department.

CALVIN W. RICE,
Secretary.

Three Presidents at Worcester

Four Presidents of the A.S.M.E. were scheduled to speak before the Worcester Local Section on January 16. Dr. Hollis was there at Worcester, Mr. Main came from Boston and Major Miller from New York. Dean Cooley was unable to attend as he expected, and so there were three. Incidentally the occasion provided the début of President Miller before the Local Sections, and the local executive committee is congratulating itself on its enterprise in securing the honor for the Bay State.

It was a surprise to many when Major Miller, in opening his remarks, made references to his residence in Worcester in his boyhood days, and all were delighted to hear him recount his local experiences of those years, especially his adventures in the engineering field.

The topic of Major Miller's remarks was Industrial Relations, a subject on which there is none better qualified to speak than he. To the deep interest of his audience, he devoted an hour and a half to relating chapters from the note book of his professional life spent in manufacturing establishments and, during the war, at the Rock Island Arsenal. His advice was a purely business relation between employer and employee—he would have none of benevolent despotism, and soul-redeeming relations—purely the business arrangement for business purposes. He advocated an honest attempt on the part of both sides to play fair and square and avoid unnecessary misunderstanding and trouble.

Major Miller's illustrations were well chosen, and his address was a finished one, and all who had the good fortune to hear him speak could not but be forcibly impressed by the soundness of his reasoning and the logic of his conclusions. All power to his rhetoric for the coming year!

Past-Presidents Main and Hollis also spoke gracious words. The trend of Mr. Main's thoughts was the place and present need

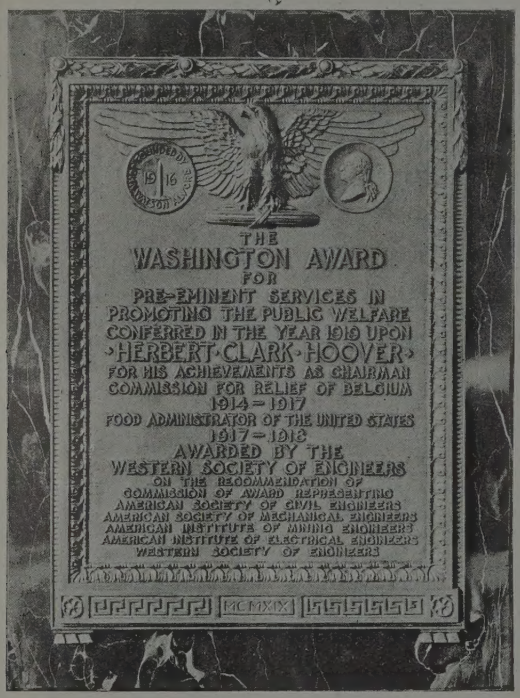
of the "professional" engineer among engineers—in Mr. Main's opinion the engineer of the professional type has a distinct usefulness in a world of engineers turned business men.

Dr. Hollis spoke in his inimitable style, and he treated his audience again to a selection of his limitless reminiscences. In more serious vein, he discussed the present world unrest and by historical illustration proved that all was not chaos, but that the present developments were but the natural processes of the transition of the present-day civilization to a higher order.

Prof. H. P. Fairfield, Chairman of the Worcester Section, presided, and the meeting was preceded by an informal dinner. A delegation from the Boston Local Section and visitors from neighboring towns were present.

Washington Award to Herbert Hoover

The Western Society of Engineers, on the recommendation of its Commission on the Washington Award, representing the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, The American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the Western Society, has named as the first recipient of the Washington Award, Mr. Herbert Clark Hoover, for his achievements as Chairman of the Commission for the Relief of Belgium from 1914-1917, and as Food Administrator of the United States from 1917-1918.



THE WASHINGTON AWARD CONFERRED UPON HERBERT HOOVER

The award will be presented to Mr. Hoover in Chicago in the latter part of February when he will make an address before the Western Society.

Mr. Hoover is now serving as vice-chairman of the Industrial Commission appointed by President Wilson, having received this appointment as a representative of the engineering profession. He is also nominee for president of the American Institute of Mining and Metallurgical Engineers.

Joseph A. Holmes Safety Association

At the meeting of the Joseph A. Holmes Safety Association, held on March 3, 1919, the Committee on Awards, Diplomas, and Medals was directed to have medals and diplomas prepared for presentation to persons in the mining and metallurgical industry who, in the judgment of the committee, had performed deeds of heroism entitling them to such recognition at the hands of the Association. At the same meeting, the President of the Association was authorized to arrange for the presentation of the medals and diplomas.

On the recent occasion of the dedication of the buildings of the Bureau of Mines Experiment Station at Pittsburgh, Pa., the President of the Association announced the awards which had been made by the committee.

The diplomas and gold medals awarded Robert Brennan, Mary J. Mitchell, Granite J. Frowen, Thomas Cooney, and Madge Dugan, all of Butte, Montana, were presented on November 26 by Daniel Harrington, Mining Engineer of the Bureau of Mines, at the "Miners' Night" opening exercise of the Butte Y. M. C. A.

Technical Inquiries

The Society regularly receives in its mail technical inquiries of all descriptions, which are referred to Committees, to members who are experts on the subjects of the inquiries, and to the Library when the inquiries involve considerable search work among the technical literature. The following titles will show the variety of subjects upon which information is requested.

Data on machine tools for an Engineering Society in South America.
Information on roller-chain drives.
Names of companies which have adopted A.S.M.E. templets for low-pressure and extra heavy flanges.
Lists of speakers on industrial relations.
Design and operation of dirigible airships.
Manufacture of alcohol for industrial purposes from molasses.
Data on flow of heavy crude oil in pipes.
Application of Diesel engines to farm tractors.
Manufacture of iron castings.
Names of firms manufacturing tinning plants.
Information on combustion of fuel oil.
Number of blowers manufactured in this country in certain years.
Layout of a foundry for manufacture of acid-proof castings.
Specifications and formulae for making cutting lubricants.
Burning of rice chaff under steam boilers.
Manufacturers of safety pins.
Process and equipment for grinding sulphur to pass 200 mesh.

Members of the Society having similar problems or requiring such data are invited to utilize the clearing house at headquarters to obtain it. All inquiries are referred to a special department and are retained as confidential.

Election of Officers for 1921

The Committee on Constitution and By-Laws held a meeting on January 23 to discuss amendments to the By-Laws to enable the new arrangements for the election of officers to be carried out. The amendments are predicated on the following schedule for the election which has been proposed by the Regular Nominating Committee and recommended to the Council for action.

Jan. 23:	First reading before Council on amendments to By-Laws to permit the following actions in connection with the election of officers.
Feb. 20:	Final action on amendments to By-Laws.
May 22:	Committee to meet in St. Louis and make its nominations.
June 1 to 15:	Nominating Committee forwards names of nominees to Secretary.
July 1:	Names of nominees selected by regular Committee published in MECHANICAL ENGINEERING.
Aug. 5:	Last day for Special Nominating Committee (if organized) to send in names of its candidates.

Aug. 19:	President appoints Tellers of Election.
Aug. 19:	Secretary mails ballots to voting membership.
Sept. 1:	Names of nominees selected by any Special Nominating Committees (if organized) to be published in MECHANICAL ENGINEERING.
Sept. 28:	Voting closes.
Oct. 1:	President announces results of election.
October:	During this month President-elect selects names to fill committee vacancies.
October:	President-elect attends Council Meeting.
Nov. 1:	Names of new officers published in MECHANICAL ENGINEERING.
November:	President-elect attends Council Meeting.
Dec. 7:	New officers inaugurated at Annual Meeting. Standing Committee members terms expire. New Committee members take office.

1920 Year Book

The 1920 Year Book will, it is hoped, be in the hands of the membership by April first.

The Committee on Publication and Papers is restoring the features omitted from last year's edition on account of restrictions on the use of print paper, and the new volume will include the following features: Calendar of events in the Society for 1920; complete list of officers and committees and local sections executive committees; portraits of present officers; general information, brought up-to-date, regarding the Society's affairs and activities; alphabetical and geographical lists of members, about 12,000 names, lists of honorary members, past-officers; calendar of previous general meetings; constitution, by-laws, rules, index, etc.

The Committee on Publication and Papers is introducing a new feature in the arrangement of the alphabetical and geographical lists of members. The alphabetical list will contain simply name and city of residence, and the full information regarding business connections, street and home and mailing addresses, will be given in the geographical list. One of the advantages of the new arrangement will be that full particulars regarding members residing in any particular city can be found from one reference only, whereas under the old arrangement it was necessary to refer back to the alphabetical list for each name required to be looked up. It is also believed that with the present development of the local sections, which now include over 70 per cent of the members, the geographical list is consulted much more frequently than the alphabetical list.

Section Meetings

ATLANTA:
January 27. Oil as a Fuel, by Charles M. Rogers, Rogers, Higgins Co.
December 16. Dinner meeting with Mr. Calvin W. Rice, Secretary of the Society; informal affair.

BOSTON:
January 22. Research. Speakers: Dean John R. Allen, and Prof. A. M. Greene, Jr.

BUFFALO:
January 6. Oxy-Acetylene Welding, by Major C. K. Bryce.

CLEVELAND:
January 27. Rubber Working Machinery, and Clay Working Machinery.

COLORADO:
December 26. Dinner Meeting held at the Metropole Hotel, Denver, Colo.

DETROIT:
January 9. The Design and Application of Electric Propulsion Equipment for Submarines, by David Hall, Pittsburgh Westinghouse Electric & Manufacturing Co.

EASTERN N. Y.:
January 9. Gages, by C. E. Johansson, C. E. Johansson, Inc., New York.

HARTFORD BRANCH:
January 19. The Use of Fuel Oil, Particularly in Steam Production, by Ernest H. Peabody, Babcock & Wilcox Co. Certain Aspects of the Fuel Question, by John P. Leask, Gilbert & Barker Mfg. Co.

MINNESOTA:
January 5. New Problems in Engineering, by Dr. Ira N. Hollis.

NEW HAVEN BRANCH:
January 21. Heat Treatment of Steel.

NEW ORLEANS:
January 12. Annual Meeting and Smoker.

NEW YORK:
January 13: New Fuel Uses. Speakers: Lindon W. Bates, consulting engineer, on Colloidal Fuel; E. H. Peabody, Babcock Wilcox Co., on Fuel Oil; and C. C. Trump, Fuller-Lehigh Co., on Pulverized Coal.

PHILADELPHIA:
January 27. Modern Boiler-Room Practice, by Norman Reinicker, Supt. of Operation, Lehigh Valley Light & Power Co.

ST. LOUIS:
January 2. New Problems in Engineering, by Dr. Ira N. Hollis.
January 28. Construction of the Old Hickory Smokeless Powder Plant at Nashville, Tenn., by Mr. A. J. Brandt, Engineer, St. Louis Mfg. Co.; joint meeting of the Associated Engineering Societies of St. Louis.

SAN FRANCISCO:
January 8. The Industrial Uses of Gas, by B. W. M. Henderson, and H. M. Crawford. Mr. M. Balliet, Moore Shipbuilding Co., delivered a paper on Use of Oil Gas in the Manufacture and Heating of Rivets.

WORCESTER:
January 16. President's Night. Speakers: Major Fred Miller, '20; Dean M. E. Cooley, 1919; Charles T. Main, 1918; Dr. Ira N. Hollis, 1917.

New York Section Discusses New Fuel Uses

The Metropolitan Section of The American Society of Mechanical Engineers held its first meeting of the year on the evening of January 3. New Fuel Uses was the topic for discussion and three papers were presented. E. H. Peabody spoke on Fuel Oil, Lindon W. Bates on Colloidal Fuel, and C. C. Trump on Pulverized Coal. The meeting was largely attended despite the fact that it had not been given wide publicity. Frederick A. Scheffler, of the Fuller Engineering Company, presided.

Mr. Peabody, of the Babcock and Wilcox Company, in discussing the subject of fuel oil, outlined the development of oil burners, furnaces, and conveying equipment. He called attention to the necessity and importance of proper furnace design, and showed by means of lantern slides numerous installations of various types of devices for the burning of oil. He also discussed the question of operating costs, and in connection therewith gave the following handy rule, calling particular attention to the fact that like all ready rules it must be used with due consideration to existing conditions. This rule is: When the cost of coal in dollars per ton (long ton) is double the cost of oil in cents per gallon, then the fuel costs of making a definite amount of steam are approximately the same. This does not include, however, the cost of labor, which, as is well known, is always in favor of oil.

Mr. Peabody showed a series of test curves recently made by the Navy Department, and which established a new world's record, as 1½ lb. of oil was consumed per square foot of heating surface per hour with an efficiency exceeding 76 per cent. This represents an evaporation of 22¾ lb. of water into dry steam per square foot of heating surface per hour from and at 212 deg. At low rates the efficiency was well above 83 per cent. These figures were presented with the permission of the Navy Department, which will shortly publish a complete account of the tests during which they were obtained.

Lindon W. Bates, who spoke on colloidal fuel, gave considerable detailed information regarding the components of that fuel and discussed at some length its special qualities. He also told of its future probable uses and stated that anthracite and bituminous coals, as well as lignites and peats, can be satisfactorily used for the manufacture of colloidal fuel. Mr. Bates reviewed some of the tests made for the British Admiralty, which faced a most serious situation in relation to its fuel supply throughout the war, and more particularly during the early months of the year 1918.

The final speaker of the evening, C. C. Trump, of the Fuller Engineering Company, outlined by a series of slides developments in the uses of pulverized coal. At the present time there are 25 installations which have been using pulverized coal for at least a year, and eight more are now in the course of construction. He stated that from 12 to 15 million tons of pulverized coal are annually consumed, nearly 80 per cent of this being used in the

cement industry and the remainder in metallurgical processes and under boilers.

Mr. Trump described an interesting type of conveying system used in pulverized-coal installations which consists of a screw feeder through which there is admitted a small amount of compressed air. This gives the pulverized coal characteristics more nearly like those of oil. This screw feeder is connected to a pipe line through which the coal can be continuously pumped, either from one bin to another or from hoppers to the pulverizing plant. Mr. Trump stated that because of the small amount of air admitted no dust collectors are necessary, a small stovepipe being sufficient to take the air from the coal.

Student Branch Meetings[1]

ARMOUR INSTITUTE OF TECHNOLOGY:
December 13, 1919. Business Meeting—Plans for conduct of future meetings discussed.

CARNEGIE INSTITUTE OF TECHNOLOGY:
October 23, 1919. Mr. Pfonts of the Division of Industries gave a talk on the work of the School.

CASE SCHOOL OF APPLIED SCIENCE:
November 20, 1919. "The New American Note in Industry," Mr. Jones of the Sherwin Williams Company.
December 11, 1919. "The Handling of Men," by Mr. Willard Beahan.

UNIVERSITY OF CINCINNATI:
December 19, 1919. Motion picture on "The Use and Abuse of Twist Drills," through the kindness of the Cleveland Twist Drill Company.

UNIVERSITY OF COLORADO:
December 4, 1919. "The History of the Industry of Prepared Roofing," by Mr. Orris.

GEORGIA SCHOOL OF TECHNOLOGY:
October 13, 1919. Business Meeting.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANICAL ARTS:
November 20, 1919. Mr. Austin Burt, General Manager of the Electric Light and Gas Company, Waterloo, Iowa, spoke on his experiences since graduation.
December 11, 1919. Business Meeting.

KANSAS STATE AGRICULTURAL COLLEGE:
September 25, 1919. Business Meeting.

UNIVERSITY OF KANSAS:
November 6, 1919. "Collective Bargaining," by Mr. Peckham.
"Organization of Labor," by Mr. Hoyt.
November 20, 1919. "Drilling Rig," by Mr. Sherman.
"Refining Processes," by Mr. Bonebrake.
"Oil Shale," by Mr. Jakowsky.
December 4, 1919. Aviation.
(a) "Theory of Flight," by Mr. Bower.
(b) "History of Flight," by Mr. Love.
(c) "Types of Planes Used at the Front," by Mr. Garvey.
(d) "Aviation—Its Present and Future," by Mr. C. White.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY:
The Mechanical Engineering Society meets on the last Friday of every month.

UNIVERSITY OF MICHIGAN:
November 12, 1918. "Relations of Mechanical Engineering to Coast Artillery," by Colonial Arthur, head of the R.O.T.C. at the university.

UNIVERSITY OF OKLAHOMA:
November 16, 1919. "History of the Liberty Motor from the Period of Its Design to the Time of First Completed Motor," by Dean J. H. Felgar.
"Improvement in Boiler Design," by Earl Bartholomew.
"The Combination Gas and Steam Engine," by L. W. Scranton.

PENNSYLVANIA STATE COLLEGE:
November 19, 1919. Business Meeting.
December 10, 1919. An outline of the A.S.M.E. Annual Meeting was given by Dean R. L. Sackett and Professor E. A. Fessenden.
December 17, 1919. "Heat Transmission," by Professor A. J. Wood.

STEVENS INSTITUTE OF TECHNOLOGY:
October 22, 1919. "Wooden Ships," by Mr. West.

VIRGINIA POLYTECHNIC INSTITUTE:
November 13, 1919. Business Meeting.

WASHINGTON UNIVERSITY:
Four business meetings have been held this year for the purpose of re-organizing the work of the Student Branch.

UNIVERSITY OF WISCONSIN:
October 15, 1919. Business Meeting.

WORCESTER POLYTECHNIC INSTITUTE:
November 14, 1919. "The Day's Work," by Doctor Ira N. Hollis.
December 12, 1919. Illustrated lecture on "Accident Prevention in Industrial Plant," by Mr. George H. Bigelow.

[1] At a recent meeting of the Council a petition for the establishment of a Student Branch at Lafayette College, Easton, Pennsylvania, was granted.

PERSONALS

In these columns are inserted items concerning members of the Society and their professional activities. Members are always interested in the doings of their fellow-members, and the Society welcomes notes from members and concerning members for insertion in this section. All communications of personal notes should be addressed to the Secretary, and items should be received by February 15 in order to appear in the March issue.

CHANGES OF POSITION

EARLE L. ZWALLY, formerly associated with the Mitchell Motors Company, Inc., Racine, Wis., has become connected with the Automotive Corporation, Pittsburgh, Pa.

S. E. FLEXER has become affiliated with the Fuller Engineering Company, Allentown, Pa. He was, until recently, connected with the Hercules Cement Corporation, Nazareth, Pa.

LESTER W. GILL, formerly professor of electrical engineering, Queens University, Kingston, Ont., Canada, is now director of technical education, Department of Labor, Ottawa, Canada.

LAURENCE DOWLING, recently assistant engineer, American Sugar Refinery Company, New York, has entered the employ of Jno. Dunlop's Sons, Spring Valley, N. Y.

LUTHER A. DAVIS, formerly production superintendent of the Standard Screw Company, Corry, Pa., has become associated with the Pressed Steel Company, Cleveland, O.

WINFRED S. BOYNTON has accepted the position of mechanical engineer with the Hudson Motor Car Company, Detroit, Mich. He was formerly associated with the Nelson Blower and Furnace Company, South Boston, Mass., in the capacity of assistant chief engineer.

GRAHAM L. MONTGOMERY has accepted the position of industrial engineer with Lockwood, Greene and Company, New York. He was formerly in the employ of the Wilputte Coke Oven Corporation, New York, in the capacity of erecting engineer.

LEWIS H. MILLER has assumed the position of mechanical engineer with The Cromwell Steel Company, Lorain, O. He was until recently connected with the Babcock and Wilcox Company, Barterton, O., as designing engineer, plant engineering department.

THOS. J. FITZGERALD, formerly chief engineer Midvale Steel and Ordnance Company, Eddystone Rifle Plant, Eddystone, Pa., has assumed the duties of vice-president and works manager of The Sturdi-Truck Manufacturing Company, Holyoke, Mass.

JOHN J. EYRE has become designing engineer with the Simplex Wire and Cable Company, Cambridge, Mass. He was until recently connected with the Sturtevant Aeroplane Company, Boston, Mass., in the capacity of factory engineer.

THOMAS BRADY has severed his connection as production manager with the Elevator Supplies Company, Inc., Hoboken, N. J., and is now connected with the Ivers-Lee Company, Newark, N. J., as factory manager.

ROY E. BRAKEMAN, who has been chief engineer of the Fairfield Works of the American Steel and Wire Company, Fairfield, Ala., is now chief engineer of the Otis Steel Company, Cleveland, O.

P. D. WAGONER has resigned as president of the Elliott-Fisher Company, Harrisburg, Pa., manufacturers of billing machines, etc., to become connected with the General Motors Company, New York. He will remain on the board of directors.

GUSTAV A. MERKT, since 1917 chief engineer for the American Tube and Stamping Company, Bridgeport, Conn., has assumed similar duties with the Clinton-Wright Wire Company, Worcester, Mass.

WILLIAM J. MOORE, who for the past three years has been connected with the Singer Manufacturing Company, Elizabethport, N. J., as mechanical engineer, has resigned to accept the position of chief

engineer of Fashion Park, clothing manufacturers of Rochester, N. Y. Mr. Moore is in charge of construction, maintenance and manufacturing equipment.

BURT A. WALTZ, formerly assistant mechanical engineer, Osborn Engineering Company, Cleveland, O., has become connected with the Portage Rubber Company, Akron, O., as chief engineer of their rubber plant, manufacturing tires, hoof pads, and mechanical goods.

ERNEST O. ZACHARIAS, formerly process engineer, Remington Arms Union Metallic Cartridge Company, Bridgeport, Conn., has accepted the position of mechanical engineer, Babcock-Bishop-Becker Company, Cleveland, O.

LOUIS J. SCHNEIDER, until recently sales manager, Harrison Radiator Corporation, Detroit, Mich., has been made director of sales of the Clark Tructractor Company, manufacturers of a 3-wheeled gasoline driven industrial transportation unit. The main sales office is located in Chicago.

W. D. HEMMERLY, formerly of the Tabor Manufacturing Company, Philadelphia, Pa., the Acme Wire Company, New Haven, Conn., and production superintendent at the Naval Aircraft Factory, Philadelphia Navy Yard, has become associated with The Thompson and Lichtner Company, consulting engineers in industrial management and construction, Boston, Mass.

D. VAUGHN WATERS has severed his connection with Gould and Eberhardt, Newark, N. J., as designing engineer, and is now associated with the Ivers-Lee Company, Newark, N. J., as assistant to the chief engineer.

PAUL E. BRENEMAN has resigned his position as chief draftsman of The Edward G. Budd Manufacturing Company, Philadelphia, Pa., after an association of 5½ years, to accept the position of chief engineer, All Steel Body Division, C. R. Wilson Body Company, Detroit, Mich.

C. MORTON BEATTIE has assumed the duties of assistant mechanical engineer, George E. Keith Company, Campello, Mass. He was formerly associated with the Bethlehem Shipbuilding Corporation, Ltd., Fore River Plant, Quincy, Mass., in the capacity of mechanical draftsman.

RICHARD S. BULL, recently sales manager, Whitlock Coil Pipe Company, Hartford, Conn., has become associated with Bradner Smith and Company, Chicago, Ill.

CLIFFORD F. HUTCHINGS, formerly connected with the Hayward Company, New York, has entered the employ of the Blaw-Knox Company, New York.

EUGENE A. MURPHY has resigned as purchasing engineer of The B. F. Goodrich Company, Akron, Ohio, to accept a similar position with The Denby Motor Truck Company, Detroit, Mich.

DONALD S. LINTON, formerly connected with the Pratt and Whitney Company, Hartford, Conn., has entered the employ of Warner and Swasey Company, Cleveland, Ohio.

JOHN D. CRAWFORD has recently become associated with the Wellman-Seaver-Morgan Company, Akron, Ohio, in an engineering capacity. He was formerly consulting engineer, in charge of research and development, Maryland Pressed Steel Company, Hagerstown, Md.

THOMAS R. COOK, until recently general works manager, Willard Storage Battery Company, Cleveland, Ohio, has become affiliated with the Westinghouse Union Storage Battery Company, Swissvale, Pa., in the capacity of vice-president and general manager.

FRANK A. TURNER has assumed the position of chief engineer with the Flexible Automotive Tire Company, of Boston, Mass. He was, until recently, chief engineer of the Becker Milling Machine Company, Hyde Park, Mass.

ALEXANDER VALLANCE has left the employ of the American Machine and Manufacturing Company, of Atlanta, Ga., to become associated with the Ordnance Engineering Laboratory of the Holt Manufacturing Company, Peoria, Ill., in the capacity of assistant engineer.

W. H. SHAFER, formerly works manager of the Triumph Electric Company, Cincinnati, Ohio, has assumed the duties of secretary and assistant manager with the Ahrens-Fox Fire Engine Company, of the same city.

FREDERICK H. RITTENOUR has severed his connection with the American International Shipbuilding Corporation, Hog Island, Pa., to accept the position of development expert, power department, under the General Staff, U. S. A., at Camp Taylor, Ky.

THOMAS D. BANKS has resigned his position as superintendent, Division of Garbage and Refuse Disposal, City of Columbus, Ohio, and has accepted the position of chief engineer with The Marion Tire and Rubber Company, Marion, Ohio.

DAVID J. JENKINS, formerly junior fuel engineer, U. S. Bureau of Mines, Pittsburgh, Pa., has become associated with the Dallas Power and Light Company, Dallas, Tex.

ANNOUNCEMENTS

E. H. PEABODY has resigned from the marine department of The Babcock and Wilcox Company, New York, to take up independently the development of fuel oil.

E. R. KENNER, formerly district manager for the South and Southwest with Wellman-Seaver-Morgan Company, has been transferred to the home office to assist H. P. Glidden, engineering sales manager.

GUSTAV HIRSCH, who has returned from France after ten months' service abroad, has opened an office in Columbus as general consulting and construction engineer. In 1917 he was commissioned Major in the Signal Reserve Corps, being promoted to Lieutenant-Colonel in May 1919.

CHARLES F. LACOMBE, recently honorably discharged from the Army, has been commissioned Lieutenant-Colonel in the Engineering Reserve Corps, U. S. A.

E. M. HERR, president of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., was chairman of the Ecuador group at the second Pan-American financial conference, held at Washington, January 12 to 17.

JAMES W. COX, JR., has opened an office in New York, for the practice of textile engineering.

C. F. ROGERS, who during the entire period of the war served as chief Government inspector on the Vickers and Browning machine guns, both ground and aircraft types, has joined the sales organization of C. E. Johansson, Inc., Poughkeepsie, N. Y., in the capacity of special representative.

WILLIAM J. FISHER, superintendent of A. B. Farquhar Company, York, Pa., has been elected president of the Engineering Society of York.

FRANK O. WELLS, president of the Greenfield Tap and Die Corporation, has sold his entire holdings to Frederick H. Payne, vice-president. Mr. Wells retires as president and member of the board of directors and Mr. Payne has been elected president in his place. FRANCIS G. ECHOLS, vice-president and general manager, has been elected a director of the corporation to fill the vacancy caused by the resignation of Mr. Wells. Mr. Wells will remain with the corporation in an advisory capacity.

ROBERT W. ROGERS has completed the installation of training at the Wilson Foundry and Machine Company, Pontiac, Mich., and is now production training consultant with office in Newark, N. J. Mr. Rogers was prominent in one of the earliest successful introductions of vocational training course in the country—in the brief courses established in the shops of the Erie Railroad.

JOHN M. SAALFRANK, formerly of Waterbury, Conn., who for the past eleven years has been designing and mechanical engineer with the DeLong Hook and Eye Company, of Philadelphia, Pa., has resigned and has opened a consulting engineering office in the same city.

CLARENCE GOLDSMITH, who has been engineer for the National Board of Fire Underwriters for the past twelve years, and late Major in the Construction Division of the Army, has been placed in charge of the branch engineering office recently established by the National Board in Chicago, from which questions pertaining to the application of the standard schedule for grading cities and towns with reference to their fire defenses and physical conditions in the middle west will be handled.

H. H. BLEE, who has recently resumed his engineering work with the State Engineering Department of California, has been commissioned a Major in the Aviation Section, Officers' Reserve Corps, U. S. A. Major Blee served throughout the war as a Captain of Air Service, his assignment being that of chief of one of the technical departments of the Airplane Engineering Division.

E. R. FEICHT, formerly assistant superintendent of plant of the Bridgeport Brass Company, Bridgeport, Conn., has been made superintendent of plant of the same company.

APPOINTMENTS

GEORGE A. WESCHLER, formerly associate professor of mechanical engineering, The Catholic University of America, Washington, D. C., has been appointed professor of mechanical engineering at the University.

NECROLOGY

GEORGE RHODES CULLINGWORTH

George R. Cullingworth, vice-president of the Garvin Machine Co., New York, died on December 15, 1919. Mr. Cullingworth was born on August 25, 1837, in Manayunk, Pa., then a suburb of Philadelphia. He attended public school there until about sixteen years of age, when he entered business with his father in Philadelphia, where he served his apprenticeship.

From 1857 to 1870 he was connected for varying periods with the following firms: Bennett, Dougherty & Sons, Philadelphia; Colt's Armory, Hartford; the Starr Armory, Yonkers; the Trenton Arms Co., Trenton, and the E. E. Garvin Co., New York. In 1870 he formed a partnership with Mr. Sargent in the Hydraulic Machine Co., New York. During this period he worked on the erection of the elevated railroad in New York City, inventing the ticket chopper which is now in use. For twenty years Mr. Cullingworth was associated with the Ingersoll Rock Drill Co., New York, as vice-president and as president. He sold his interest in this firm to become connected with the Garvin Machine Co., with which concern he spent the last twenty-two years.

Mr. Cullingworth was a member of the General Society of Mechanics and Tradesmen of the City of New York. He became a member of our Society in 1884.

ALDEN R. MEEK

Alden R. Meek, manager of the New England district for the Westinghouse Electric & Manufacturing Co., died on November 11 in Harrisburg, Pa., of typhoid.

Mr. Meek was born on January 24, 1886, in Houtzdale, Pa. He was educated in the public schools of Harrisburg and later attended Pennsylvania State College, from which he was graduated in 1909, receiving his post-graduate degree in electrical engineering in 1914. Before entering college, Mr. Meek obtained his shop experience at the Harrisburg Foundry & Machine Works. Upon graduation he became connected with the Ridgway Dynamo & Engine Co., Ridgway, Pa., and was with this concern until 1917, when he resigned from his position as manager of the Boston office to become sales engineer in the turbine section of the power department of the Westinghouse Co. During the war he supervised the company's interests in Washington, D. C., returning to take the position of paper and rubber specialist in the industrial department, later becoming supply manager of the New England District.

Mr. Meek became an associate-member of the Society in 1918.

WILLIAM T. ENGLISH

William T. English, president of the W. T. English Co., Boston, died on December 22, 1919. Mr. English was born on July 21, 1855, in Baltimore, Md. The family moved to Boston when he was a child and he was educated in the schools of that city. He served his apprenticeship as patternmaker with the Boston Machine Co., and then entered the employ of the Boston Blower Works. In about four years he was advanced to the position of works superintendent. His leisure time at this period was devoted to the study of mechanical engineering.

In 1895 Mr. English became connected with the Walworth Construction & Supply Co., as construction engineer, resigning in 1903 to become president of the Walworth-English Fleet Co., with which concern he was associated for fourteen years. For the last two years Mr. English was engaged in business for himself under the name of the William T. English Co., Boston.

Mr. English belonged to several fraternal organizations. He became a member of the Society in 1902.

EDWARD T. WALSH

Major Edward T. Walsh was born in April, 1872, in South Orange, N. J. He obtained his technical education in Pratt Institute, Brooklyn, and was for some years connected with the maintenance department of the New York and Brooklyn Bridge. Later he became connected with the Atlas Portland Cement Co. as a designer of power-plant and building equipment in their mechanical department. From 1901 to 1906 he was employed by the Interborough Rapid Transit Construction Co. as draftsman, resigning to go to Dayton, Ohio, as construction engineer with the National Cash Register Co., where he superintended the construction of several large factory buildings.

From Dayton Major Walsh went to Philadelphia, where he continued his work in the design and construction of industrial buildings, becoming associated in 1909 with Frederick A. Waldron in industrial engineering; one of his notable undertakings at this time was the construction of the large service station for the Edison Illuminating Co., Boston, Mass.

Shortly after the opening of the world war Major Walsh became chief engineer of the Canadian Car & Foundry Co., New York, which handled a number of large shell contracts for the Russian Government. He also spent nearly one year with the Maxim Munitions Corporation on a cartridge contract at Watertown, N. Y. When the United States entered the war he was commissioned as major in the Ordnance Department, serving in some of the most active divisions of the work. Following the armistice, he was connected with the salvage board of the Western New England District, and at the time of his death, January 13, 1920, was chairman of this board.

Major Walsh became a member of the Society in 1913.

FUNCTIONS OF ENGINEERING SOCIETIES IN INDUSTRY

President of British Institution of Mechanical Engineers Discusses Opportunity of Organized Mechanical Engineers

IN his presidential address before the Institute of Mechanical Engineers of Great Britain, Dr. Edward Hopkinson spoke of the effects of the war on the industry and profession of mechanical engineering, whose interests it is the function of all engineering societies to conserve and promote. He described the lessons war has brought to mechanical engineers, which the societies must mark and learn if they are to adequately discharge the duties of this calling. Dr. Hopkinson said in part:

We are entering on a new decade which may well prove as difficult and critical as that we are leaving behind. We can achieve success only by years of patient and strenuous work, whose keynote must be the national unity of effort in war translated into our industrial life. Industry must be reorganized with methods, personnel and plant more efficient, more productive, and more perfectly adapted to their purpose. As mechanical engineers, we ought to realize that both the direction and the execution of this reconstruction lie largely with us. It is fitting, therefore, that we should leave no stone unturned in seeking out and eliminating the causes of our past failures and in finding means whereby we can best satisfy present and future industrial needs.

ADMINISTRATION AND ORGANIZATION

The exigencies of war have taught us much and have, I think, brought to the fore a considerable number of young engineers of natural administrative and organizing capacity. But administration and organization cannot be left entirely to natural aptitude, even when combined with long experience. There can be little doubt that in the future our shops must be managed by younger men, of more limited personal experience than has been customary hitherto, who will therefore need to rely to a greater extent upon the experience of others, acquired through reading and lectures. These questions of management and organization are vital matters which ought not to be left to chance and should form part of the specific training of a mechanical engineer.

The full freedom of industries in availing themselves of the new mental material turned out by the technical schools and colleges has been hampered by the innate conservative prejudices of the so-called practical man. The man from the technical schools, however brilliant, could not hope to obtain recognition as a useful member of the administrative staff until he had been through a mill of two or three years of what is designated practical training, during which he could earn no remuneration and might count himself fortunate if he was not called upon to pay a premium for the privilege of working. His heart was often broken by the drudgery of repetition work coming at a time of life when minds are most receptive and fullest of desire to be of use and to absorb new ideas. The war has changed the outlook of the works manager. He has begun to realize that the man who has the advantage of wide reading and of thorough technical training, provided he has a natural practical bent, may make a far better under-manager than the man who has not these advantages, but has spent a much longer time in the workshop. One reason which has militated against the more rapid absorption of the product of the technical schools as an integral part of workshop organization is to be found in the fact that too little time is given in the schools to teaching the art of production.

The right use of tools and the accommodation of design to the methods of manufacture and to the tools available receive too little attention. Many lectures are devoted to the design and working of a dynamo or steam engine, but few to that of a lathe or milling machine. How often are parts of scientifically correct design incapable of being molded economically in the foundry or tooled economically in the shop?

Engineers have had an unhappy experience in this respect during the war through having to carry out Government designs, the product

of the drawing office without regard to the works, designs unchastened by the necessity of having to hold their own in the world's markets. Yet, I do not believe that it is impossible to inculcate the basic principles of economical production in the classroom, the laboratory and the workshop of the technical school as effectively as, and certainly in a much shorter time than, in the factory. If such subjects were widely taught, the student would soon discover in what direction lay his natural bent and would in his own mind specialize in that direction, and when he came to the workshop, would be able to show that he could readily absorb shop training in his own specialized subjects and make himself useful therein. If a man, soon after leaving college can show that he is capable of occupying a definite post in workshop organization, it will qualify him to pass from one works to another and so to obtain experience of different conditions and methods, and, as is most desirable, in countries other than his own. Happily, the war has done much to break down the prejudice against interchange of experience in the engineering industry, for, where almost all have been forced by circumstances to turn from work to which they were accustomed to other work of quite different character which had to be carried out under pressure of extreme urgency, managers soon found out how much they could help each other, and in responding to the national need came to realize the advantages of coöperation.

Our Institution also has an important part to play in this respect. Much can be done by encouraging the reading of papers which deal with workshop organization and with production from tools. There has been already a noticeable increase in papers of this character, and I hope it will continue. I do not agree that the discussion of these problems will tend toward advertisement, lower the general scientific status of the papers, or emphasize unduly the purely commercial aspect of works production. A description of the means adopted by a works manager to obtain maximum production of the required degree of accuracy at minimum cost is as important to the progress of mechanical engineering as the description of a new invention.

There is another side of engineering at which it is too often the custom of engineering institutions to look askance, namely, that concerned with the distribution and selling of the product. In most industrial engineering undertakings, the commercial section of the staff is larger than the designing, testing, and foreman section, and it is just as essential to the highest success that it should be composed of trained engineers. A very large proportion of the men who enter engineering works with the intention of fulfilling their calling on constructive work find that they are drafted, through the force of circumstances, to the commercial side, and develop their careers in that direction. No salesman of high-class engineering products can be altogether successful unless he has the engineering instinct and has had a sound engineering training. The successful engineer-salesman must be able to understand and enter into the wants of the purchaser and suggest means for satisfying them. He must also understand thoroughly the properties and capabilities of what he has to sell. It is a common though erroneous idea that a man ceases to be an engineer when he becomes involved in the commercial side of engineering. On the contrary, it often happens that in discharging his commercial duties he is using to the best advantage his engineering knowledge and aptitude.

In a recent paper read before the Institution of Electrical Engineers, entitled "The Functions of the Engineer, his Education and Training," Lieutenant-Colonel O'Meara discussed in great detail the extent to which teaching in the subjects of administration, organization, and commercial management "indispensable to the complete engineer" should form part of the curriculum of engineering education. His conclusions are based on the fact, too little recognized by those responsible for the conduct of our technical colleges, that in after life a far larger proportion of engineering students find their vocation in the administrative rather than in the technical side of industry.

In mechanical engineering, perhaps more than in any other branch of technical science, the inventor, the designer, and the research worker must keep in constant touch with the workshop organization. This interdependence should be recognized throughout his college training. For the average man it may be necessary to cut down the hours spent in higher technical work and devote the time so gained to administrative and commercial subjects, and for the exceptional man to postpone some of his higher technical work to a later part of his college career.

Whatever may be the steps taken to widen the curricula for engineering students, it is essential that those occupied in administrative duties should recognize that successful administration is based on principles which are capable of definition and of scientific treatment and analysis, that the accumulated experience of others can be put into a form in which it can be taught and learned, and that those mental and moral characteristics which are essential in the good administrator can at least be developed, if not implanted by training.

We must not, however, be content with teaching only those who are to administer our works and factories. We shall never get the best out of any system of organization or administration in any field of work unless the workers themselves understand the principles upon which the system is based. A wise manager in an engineering shop will make no changes without first explaining their object to the workers, probably through the medium of the Works Committee. A still wiser manager will so develop the interest of the workers in efficient administration, that proposals for improvement originate with them, and they thus assume the position of having to prove their case. With this in view, it is most important that there should be evening classes in administrative subjects in our technical schools.

Largely due to the experience gained during the war, the need for systematic instruction in industrial administration has been so prominently forced on the attention of those responsible for the conduct of some Lancashire engineering and other industries, that a year ago six firms combined to make an offer to the Manchester Municipal College of Technology to provide an annual sum for the establishment of a special department for this purpose. The department has been constituted and is worked in close coöperation with an Advisory Committee of those who are themselves engaged in works administration. A director has been appointed with three assistants. The objects of the department are stated in the prospectus to be:—

1 To study scientifically all questions regarding industrial management and to collect and coördinate the information obtained.

2 To use all knowledge gained with the object of furthering the education of managers, workers and students.

3 To assist in building up a science of industrial administration, and as far as possible to work out its applications to all British industries.

The material side is only one part of works administration; not less important is the purely human factor. All that pertains to the physical health and mental contentment of the workers is reflected in the efficiency of their work. We have, in many respects, paid far less attention to these matters than the Germans, the Swiss, or more particularly the Americans, but it is significant that the Director of the new Department of Administration in the Manchester College of Technology is a physiologist.

Comparatively little work has been done in England in the quantitative measurement of variations of productive power dependent upon the hygienic conditions of the workshop, and yet in many cases it is possible to establish a definite relation between them. Largely due to lessons taught by war conditions, it has become a recognized practice in well-organized works to appoint welfare superintendents and apprentice masters whose function is to promote healthy conditions of mind and body for the workers. Such officials can abundantly justify their position.

The most important problems in the human side of administration are those connected with industrial fatigue. The efficiency of a man as measured by his capacity for output is dependent upon his hours of work, both in length and distribution, and the integration of the curves connecting rate of output with time of work will show the maximum amount of work which can be obtained from the individual. The investigation of these questions on a scientific basis is of a peculiarly difficult nature on account of the large number of independent variables which affect the result. It may be shown, for instance, that a workman's output is actually greater when working 48 hours a week than when working 53, but such a conclusion may be inapplicable generally because the greater capacity for work may be due not merely to the shorter hours, but to the fact that the shorter hours provide a better distribution of work-time and playtime. For example, the shorter hours may enable the before-breakfast hours of work to be completely abolished, and this may have salutary effects dependent upon quite other factors than length of working hours. Again, to arrive at results capable of wide application, observations must be made over long periods, the object being to ascertain the conditions necessary for the continued maintenance of human effort at its maximum efficiency.

Thus observations limited in time might show that it would be better to add the hours of Saturday morning's work to the five other working days in the week and thus insure two clear days, but more extended observation might show that instead of two days' freedom from work in the week, it was better to allow the hours of leisure to accumulate and insure a month's complete holiday in the year. Another difficulty is the fact that as yet physiologists have not discovered any definite means of measuring fatigue or of determining the state of the body at any particular time with regard to fatigue. Many experiments and much observational work have been carried out with a view to finding such a measure, but with only limited success, and at present the only measure of capacity for work at a given time appears to be the actual rate at which work is done at that time. This is obviously unsatisfactory, because it introduces many factors other than the purely physiological ones of fatigue. It is, for example, a well-known fact that the maximum rate of work does not occur after relaxation. It takes time, as it were, for a man to get into his stride. These are probably psychological effects and not purely physiological.

The appointment last year of the Industrial Fatigue Research Board by the Department of Scientific and Industrial Research and the Medical Research Committee jointly, at the request of the Home Secretary, shows the importance attached to a comprehensive and systematic investigation of these problems. It is the duty of the Board to "Consider and investigate the relations of the hours of labor and of other conditions of employment, including methods of work, to the production of fatigue, having regard in this investigation both to industrial efficiency and to the preservation of health among workers.

EMPLOYMENT BULLETIN

THE SECRETARY considers it a special obligation and pleasant duty to make the office of the Society the medium for assisting members to secure positions by putting them in touch with special opportunities for which their training and experience qualify them, and for helping any one desiring engineering services. The applications and positions listed below combine the services of the Society and of the Engineering Societies Employment Bureau, Engineering Societies Building.

POSITIONS AVAILABLE

Stamps should be inclosed for transmittal of applications to advertisers; non-members must accompany applications with a letter of reference or introduction from a member; such reference letter will be filed with the Society records.

ENGINEER with 3 or 4 years' experience since graduation in testing laboratory. Work will be special investigations involving laboratory-research work and also factory testing of electrical apparatus. Applicant must be above average in alternating current theory, with experience in test department of large manufacturer. Laboratory experience in electrical measurements desirable. Location New York City. R-2403.

ELECTRICAL ENGINEERS OR PHYSICISTS especially interested in illumination or photometry. Openings also for chemical engineers in research work. Positions are with government bureau. Recent graduates considered. Salary $1200 per year and up. R-2404.

YOUNG ENGINEER of sound technical training desired in connection with development of new high-frequency electrical apparatus. Good grasp of physical and mathematical fundamentals important. Signal Corps experience useful. Permanency assured. Location New York City. R-2405.

JUNIOR RESEARCH ENGINEER; long-established industrial organization in rapidly expanding field has attractive opportunity for young man of first-class ability and thorough training in electrical engineering or technical physics. Postgraduate training desirable, but not insisted upon. Prospects limited only by ability. Salary proportionate to education and record. Location New York City. R-2406.

DEVELOPMENT ENGINEER; young engineering graduate wanted for experimental development work on electrical apparatus. Distinctive opportunity for young man of energy, resourcefulness and supervisory capacity to grow with new enginering developments of a fundamental nature. Salary determined by qualifications. Location New York City. R-2407.

MECHANICAL DRAFTSMAN to work on motor-truck dumping body; must be able to make detail drawings and inspect shop work. Will lead to sales position. Must have good personality and be single. Salary $30-$35 per week. Location: New York City, traveling in vicinity. R-2408.

RECENT GRADUATE for power-plant layout work. Location New York City. R-2410.

MARINE DRAFTSMAN for hull and engine work. Location Staten Island. R-2412.

ASSISTANT ENGINEER to reorganize department for company manufacturing steam and electric hoist and grab buckets, and to take charge of design; will be in charge of drafting room. Location Boston, Mass. R-2413.

ENGINEER with practical experience in manufacture and sale of zinc sulphate, zinc chloride, or other zinc salts. R-2414.

RECENT GRADUATES for statistical work. Salary $25 per week. Location New York City. R-2416.

METALLURGIST with experience on airplanes for testing machines and writing specifications. Salary $45-$50 per week. Location Garden City, L. I., N. Y. R-2418.

MECHANICAL ENGINEER to make improvements on present machinery for company manufacturing belts. Location Chicago, Ill. R-2421.

ESTIMATOR for plant located in Eastern Pennsylvania, about 150 miles from New York; and including foundry machine, structural, forge and pattern shops, etc. Rare opportunity to connect with fast-growing, progressive organization. In replying state age, education, qualifications, references, past experiences and salary expected. R-2422.

ENGINEERS to design, construct and operate sugar refinery. Thoroughly competent men desired for new refinery just starting in Canada. Salary $4000 per year. R-2423.

METALLURGISTS; must be experienced and capable of personally conducting or supervising tests for large manufacturing company. Two openings. Location New York State. R-2426.

DRAFTSMEN WANTED to lay out construction plans and mechanical equipment for large power house. Location Connecticut. R-2427.

CHEMICAL ENGINEER to have charge of operation of small unit for production of filters for gas-mask canisters. Not necessary to have any great knowledge of this phase of work. Must combine willingness to work with some understanding of practical manufacture, and must be able to install and operate control laboratory for testing finished product. Government position. Salary $2500-$3000 per year. Location Maryland. R-2428.

REINFORCED-CONCRETE DESIGNERS, with extensive experience on industrial building work. Location Detroit, Michigan. R-2430.

MECHANICAL ENGINEER for position with company manufacturing street signs, warning signals, etc. Location New York City. R-2431.

TRANSITMAN. Location Yonkers, New York. R-2433.

MASTER MECHANIC, for company manufacturing iron, steel and edge tools operated by water power. New England man preferred. Location Connecticut. R-2436.

MECHANICAL DRAFTSMAN to work out details from sketches and general drawings. Prefer one with experience on elevator or conveyor work. Location New York State. R-2440.

PLANNING DEPARTMENT EXECUTIVE WANTED for factory employing normally 900 men; manufacturing steam turbines and centrifugal pumps; business growing rapidly; location and facilities unexcelled; position involves complete charge of scheduling and following up of raw material and manufacturing processes on all orders; position reports directly to works manager; salary entirely dependent on ability to assume responsibility and to get results. Application should give in detail experience and shop and office training which would qualify for such a position, give references and state salary expected. R-2441.

CIVIL ENGINEERING GRADUATE with two or three years' experience for position with large industrial corporation. Location New Jersey. Application by letter; state age, education, experience, when available, minimum salary, etc. R-2442.

FIRST CLASS DRAFTSMAN with some general mechanical ability. Must be capable, neat and thorough; knowledge of mechanisms and details essential. Prefer man with considerable experience in drafting. Location New York State. R-2443.

MACHINE-TOOL DETAIL DRAFTSMAN; must be A-1 man in this line of work. Location Newark, N. J. R-2446.

ELECTRICAL ENGINEER with first-class experience in both large and small transformer engineering. Would go into transformer engineering department of large manufacturing company as assistant engineer. Duties will include much special development work. Location Indiana. R-2447.

FUEL-OIL ENGINEERS and other specialized engineers in petroleum industry; must be particularly high-class men, preferably college graduates with engineering degrees; must have pleasing personalities and should be capable of handling high-class commercial work as well as the actual running of comparative tests, etc., in various kinds of plants. Location Illinois. R-2449.

SUPERINTENDENT for reinforced-building construction. Location Pennsylvania. R-2450.

CHEMIST with experience in routine analysis of iron ores. Technical graduate of recognized college; single, about 24 years of age desired. Location West Africa. Healthful tropical climate. Two year contract. Will live in town of approximately 1000 whites. Salary $175 per month, plus traveling and living expenses. R-2451.

SURVEYOR for general field work. Civil engineering graduate, single, about 24 years old and with 2 years' experience desired, for position in West Africa. Healthful tropical climate. Two year contract. Will live in town of approximately 1000 whites. Salary $175 per month, plus traveling and living expenses. R-2452.

GENERAL MANAGER for company manufacturing complete line of rubber-covered wire ranging in size from lamp cord to mining machinery cable. Applicant must thoroughly understand business. Company's financial position and standing in the trade are good. Will sell stock, on favorable terms, to experienced and qualified man. R-2453.

ANALYTICAL RESEARCH CHEMIST for experimental laboratory. Industrial experience required. Salary $45 per week. Location Newark, N. J. R-2454.

DRAFTSMEN, topographical and mechanical, for work with U. S. Government in Alabama. Salary $150 per month. R-2456.

SALESMAN for machine tools. Salary $40-$50 per week. Location Brooklyn, New York. R-2457.

ENGINEER; expert in the manufacture of toy transformers. Only man with thorough knowledge of manufacture of large quantities of toy transformers can qualify. Location New Jersey. R-2461.

EXECUTIVE with accounting experience for work with company manufacturing small machinery parts. Location New York City. R-2462A.

RESEARCH FELLOWSHIP IN ACOUSTICS has been established for the encouragement of investigation in this science; at middle western technical institution. Candidates must be college graduates and have at least one year of advanced study in physics. Stipend is $1000 per year. Location Ohio. R-2465.

MAN CAPABLE OF TAKING CHARGE OF BUILDING MACHINE TOOLS; must have had experience building high-grade machine tools and be good executive. In reply state experience, age, salary expected. Location Massachusetts. R-2473.

MECHANICAL ENGINEER to take charge of mechanical engineering of live concern. Must be capable of designing tools, jigs, fixtures, special machinery; supervise others on this work; and manage engineering department and drafting room in the most efficient manner.

In reply state experience, age, salary expected. Location Massachusetts. R-2474.

MECHANICAL OR ELECTRICAL ENGINEER familiar with gas engines, test work, etc.; must be graduate engineer; some sales experience desirable. Location New York City. R-2485-A

MECHANICAL ENGINEER to act as assistant to manager; must be acquainted with office details, follow up systems, etc.; some sales experience desirable. Location New York City. R-2485B.

MECHANICAL ENGINEER: recent graduate for production work, for company manufacturing subway gratings. Location Long Island City. R-2489.

STRUCTURAL DRAFTSMEN experienced on detailing and checking. Rates will range from $135 per month up, depending entirely upon the man's experience and ability to handle our line of work. Five openings. Location Cleveland, Ohio. R-2491.

YOUNG CHEMICAL ENGINEER for position in industrial laboratory to test raw materials and help in solution of problems connected with manufacture of rubber. Must be technical graduate. Location New York State. R-2492.

OPERATING ENGINEER; must be technical graduate with considerable experience in construction, operation and maintenance of hydraulic and steam generating plants and overhead and underground transmission and distribution systems. The present system includes a 20,000 kw. hydroelectric plant and two auxiliary steam plants, 44,000 volts and 12,000 volt transmission system and 2300/4000 volt distribution system with ten substations. Will have direct charge of operation and maintenance of entire system. Applicant must have had similar work and responsibilities with central station company. Location Chicago, Ill. R-2493.

ENGINEER OF PLANS AND RECORDS; to take charge of division, the work of which consists of the preparation of plans, specifications and estimates for all additions to or changes in the present generating, transmission and distribution systems, inspection of all work and keeping of records of operation, construction and maintenance. Also necessary that the men be qualified to take charge of operation of system during absence of operating engineer. The man for this position must be technical graduate with experience in the design, operation and maintenance of central station systems with some experience in general office methods and systems of records. Must also have experience in the preparation of plans, specifications and estimates for work in connection with central station properties. R-2494.

YOUNG MEN with education and possibilities for growth, to start in our manufacturing plant with the idea of learning business. Unnecessary to have any technical education, but there would be certain advantages to man with chemical or mechanical engineering training. Good opportunity. One or two openings. Location New Jersey. R-2496.

METALLURGIST for middle-west plant doing case hardening of small parts. Technical man with some experience and exceptional ability for getting things done is required. Location Indianapolis, Ind. R-2497.

EXCEPTIONAL — NOT AVERAGE — YOUNG TECHNICAL MAN for shop executive position in Indiana manufacturing plant, employing 800. Man with real possibilities who is seeking an opportunity to demonstrate his capacity is required. Experience, while helpful, is not of greatest importance, as it is expected to give him proper training. In application give education, accomplishments, and small photo, if possible. R-2498.

RECENT GRADUATE to take charge of machine and other parts of business of company manufacturing heating apparatus. Must have technical education, common sense and executive ability. Is wanted to aid in developing the business. Location New York State. R-2500.

YOUNG ENGINEERS FOR STEAM-TURBINE WORK. Company wishes to give several young technical graduates nine months' engineering apprenticeship, with a view to fitting them for the openings which occur from time to time, especially in engineering and sales departments. Must have energy and caliber which will fit them to eventually hold responsible positions. Location Connecticut. Give details of training and experience when writing. R-2501.

TURBINE CALCULATOR, thoroughly familiar with thermodynamic design of impulse turbines of Curtis and Rateau types. This position can be made broader than a calculator's job, for a man of good judgment, experience and ability to teach an assistant. Location Connecticut. R-2502.

MECHANICAL ENGINEER to go into the factory engineering department of large manufacturing company to develop into an all round man. At first, work will consist of specifying and ordering machine tools. Excellent opportunity to get general factory experience. Salary $28 to $35 per week. Location Indiana. R-2504.

DRAFTSMEN for design of radio apparatus. Position at radio laboratories, Camp Alfred Vail (Little Silver), New Jersey. Pay $2100 to $2500 per annum. Give details as to age, experience and references. R-2505.

MECHANICAL OR ELECTRICAL ENGINEER with experience in design of radio apparatus to take charge of drafting room. Position at radio laboratories, Camp Alfred Vail (Little Silver), New Jersey. Pay about $3000 per annum. Give details as to age, experience and references. R-2506.

ASSISTANT EDITOR: for *The Electric Journal*, 1204 Keenan Building, Pittsburgh, Pa. Must be technical graduate, have a pleasant personality, originality and imagination. Young man preferred. Salary dependent upon qualifications. R-2508.

EMPLOYMENT MANAGER; mechanical engineer under 30, with experience in this line of work. Location New York City. R-2510.

MAINTENANCE ENGINEER to take charge of electrical power plants and steam turbines on phosphate rock-producing property. Westinghouse turbines installed. Liberal salary. Location Nichols, Florida. Living conditions reasonably desirable. R-2511.

MASTER MECHANIC for work in a bleachery plant. Location New Jersey. R-2512.

WELL-ESTABLISHED COMPANY in middle west manufacturing electrical devices, wiring material, outlet and switch boxes, fittings for conduit and armored cable, and the like, wishes to employ competent engineer, with experience in designing such material, to develop additional lines for it to manufacture and to improve its present product. Location Pennsylvania. R-2513.

MECHANICAL, MARINE AND STRUCTURAL DRAFTSMEN; nine openings for experienced men, one of whom must have had patent office experience. Salary $45-$50 per week. Location New York City. R-2515.

PRODUCTION ENGINEER for position with company manufacturing drying ovens; must be mechanical engineer; will have entire charge of factory. Location Connecticut. R-2518.

MECHANICAL ENGINER; good executive who understands automobile business, to have full charge of plant. Location Massachusetts. R-2519.

INSTRUCTOR in surveying and mechanics, from February to June. Salary $150-$175 per month. Location Penn. R-2520.

RECENT GRADUATES to qualify as chemical engineers, gas operators, electricians, etc., in plant of large manufacturing company. Location Tenn. R-2527.

RESEARCH ENGINEER. Excellent opportunity for right man, with one of the largest concerns of its kind in the United States. Location Chicago. Must be technical graduate with 8 or 10 years of general engineering experience, including designing, experimental engineering, compilation of data, planning and working out of an assigned subject. Must have initiative and tact. Write, giving references, age, experience and salary. R-2529

CIVIL OR MECHANICAL ENGINEERS; familiar with mechanical and structural design work, thoroughly experienced, good executives and thoroughly capable of pushing work in field, to take charge of construction and installation of general mechanical equipment of factory. Two openings. Location Philadelphia, Pa. R-2530.

RECENT GRADUATE, preferably M. E., from school of recognized standing to do experimental industrial engineering with opportunity to advance. Location Philadelphia. State full experience and salary expected in first letter. R-2531.

ENGINEERING DRAFTSMAN; young engineers, preferably technical graduates with some industrial experience. Work will cover designing of machinery, buildings, etc., laying out of transmission lines, equipment and other work in connection with a manufacturing plant. Location, home office of Hercules Powder Company, Wilmington, Delaware. Apply Engineering Department. R-2534.

MASTER MECHANIC with good machine-shop and power-plant experience. Two openings; one in England, the other in the United States. Z-1.

ASSISTANT HEAD for construction and repair department of large chemical plant. Must have had five or six years' general experience on actual building construction, erection of machinery and maintenance of equipment. Technical graduate preferred. Location New Jersey. Z-5.

MILL SUPERINTENDENT OR FOREMAN to take charge of two hundred ton cyanide mill treating silver ores at Guanajuato, Mexico. Must have had employment in similar capacity. Mexican experience and knowledge of Spanish desirable, but not absolutely essential. Salary $300 per month. Z-11.

INDUSTRIAL ENGINEER experienced in handling of coal and clays. Company has problem at one of the plants that it desires to have studied and a report made thereon with a view to effecting economies. Location Missouri. Z-18.

FOUNDRY SUPERINTENDENT; must be thoroughly versed in foundry practice for ordinary gray-iron castings. Majority of work will be of high-grade small castings, ornamental work, etc., with occasional large casting; model foundry comprising brass, aluminum and white metal departments. Salary $75 per week approximately. Location Hoboken, N. J. Z-19.

MECHANICAL ENGINEER wanted by firm of consulting engineers. Experience required in design of construction of steam, gas and refrigerating plants. Liberal salary paid commensurate with breadth of experience. In applying present a record of education, experience, salary desired and such other information as may be of interest. Location North Carolina. Z-20.

YOUNG ENGINEER, technical graduate, to assist in testing and research department. Knowledge of combustion and boiler tests is requisite. In writing give references, experience and age. Location Detroit. Z-21.

INDUSTRIAL RELATIONS DIRECTOR; age 30 to 40 years, with about 10 years' experience in manufacturing industry, preferably in production work and about 2 years in employment work; broad-gage and high-class man wanted. Salary approximately $4000-$5000. Location Rochester, New York. Z-22.

RECENT GRADUATE in industrial chemistry; not over two years out of college. Salary depends on experience. Location Rochester, New York. Z-23.

METALLOGRAPHER, about two years out of school, experienced in tool and alloy steel, for research work; opportunity to branch into sales or operation. Location Latrobe, Pa. Z-37.

INSTRUCTOR for machine-shop methods, free-hand drawing, machine design, internal-combustion engines (gas and gasoline) and automobile repairs and construction (for full or part time) work. Location New York City. Z-38.

TEXTILE ENGINEER for three months' work, experienced in textile machinery. Location town near Boston, Mass. Z-42.

RECENT GRADUATE MECHANICAL ENGINEER; for task setting and layout work. New Jersey man preferred. Salary $30. Location Newark, New Jersey. Z-44.

FIRST-CLASS TECHNICAL FOREMAN to have charge of service and repair work on Cadillac, Dodge, Franklin, Nash and Overland automobiles and trucks. Location Lawrence, Mass. Z-45.

MECHANICAL ENGINEER, familiar with machine-shop production, for research work in press room of publishing company. Good personality and tact important; over 30 years old, with about four years' experience. Location Philadelphia, Pa. Z-46.

ASSISTANT TO ELECTRICAL ENGINEER for general utility work with light and power company; technical graduate, with 2 or 3 years' experience, preferably on testing. Location Poughkeepsie, N. Y. Z-47.

CIVIL ENGINEER, preferably a graduate with 2 or 3 years' experience, for general building and structural work, including transmission line structures, surveys, etc. Location N. Y. State. Z-48.

MECHANICAL ENGINEER, preferably a graduate with 2 or 3 years' experience, for plant layout, boiler and turbine testing, etc. Would be assistant to mechanical engineer. Location New York State. Z-49.

EXPERIENCED DESIGNER of internal-combustion engines for operation on both gasoline and kerosene. Technically-trained man essential. In reply, give details of education, experience and qualifications. Z-51.

EXPERIMENTAL ENGINEER in plant of 4000 employees. Must be thorough mechanic and abundant experience, imagination tempered with sound common sense and ability to arrive at a definite goal. Only first-class men need apply. Location Central New York. Z-52.

SALES ENGINEER for New York City and vicinity. A young engineer, graduate preferred, but essentially a salesman, experienced selling pumping machinery, steam engines, boilers and general power plant accessories. This is good opportunity with progressive organization. Z-53.

COMPETENT ENGINEER, who has specialized in the mechanical handling of raw materials such as coal and clay, for position with large manufacturer of refractories. Z-54.

DESIGNING ENGINEER of fractional horsepower motors; should be capable of handling, designing and testing. Excellent opportunity for young engineer with ability, as the company is now being organized. Factory will be located in Middle West. Applications will be treated as strictly confidential. Z-55.

CONSTRUCTION SCHEDULE ENGINEER; young, energetic technical graduate, with several years' experience in estimating and handling construction enterprises. Would be expected to keep construction program lined up in order to finish work on date set. Location Minnesota. Z-56.

DRAFTSMEN WITH EXPERIENCE IN MECHANICAL AND ELECTRICAL LINES for position with company manufacturing radio and electrical equipment. Two openings. Salary $35 per week. Location New York State. Z-57.

CONSTRUCTION DRAFTSMAN; one capable of designing and making working drawings of modern mill buildings. Prefer man of good habits; below twenty-eight years of age; and with Mechanical or Civil engineering training. Location Virginia. Z-58.

ENGINEER with experience in the design and production of tractors; must be practical engineer familiar with manufacturing and able to handle details of engineering department. Location Alabama. Z-59.

PATENT ENGINEER; must be technical graduate and be able to prepare new engineering developments for patent protection. Qualifications: Inventive ability, excellent general theoretical knowledge in chemistry, physics and engineering, as much knowledge as possible of manufacturing and knowledge of patents. Must have ability to take engineer's ideas and expand them into broad patent claims. Excellent opportunity for man of theoretical and scholastic tastes. Location Connecticut. Z-60.

ASSISTANT WORKS ENGINEER: experienced on shop layouts, tool and machine design, as well as pipe layout and general industrial building work. Majority of work will be on board to start. Opportunity for hustler. State training experience and salary expected. Location Western New York. Z-61.

PRODUCTION AND SALES MANAGER for concern manufacturing house-heating and house-boiler apparatus; company employs between 400 and 500 men. Salary $10,000 per year. Location New York State. Z-67.

GALVANIZER; graduate engineer to take executive charge of galvanizing department and look after production and organize department. Must know galvanizing business to teach green force. Position is with chemical industrial plant at present smelting gold and copper. Location New Jersey. Z-68.

CEMENT COMPANY in Philippine Islands wants technical man, expert in Portland cement, and possessing good executive ability. Fifty-one per cent of the capital of the company is held by the government of the Philippines and 49 per cent by private capital. State terms and conditions under which employment would be accepted. Z-69.

ASSISTANT ENGINEER for water works. Desirable that applicant have had some water-works experience. Plant is rapidly growing and there is considerable amount of new construction under way. Salary $150 per month. Location Nebraska. Z-76.

ASSISTANT ENGINEER with experience in transmission and differential work for position with company manufacturing automobile gears. Must be thoroughly familiar both with production, manufacture, and operation. Salary $250-$300 per month. Location Ontario, half hour from Buffalo. Z-77.

GENERAL EXECUTIVE able to survey and organize entire undertaking of coated-paper containers proposition. Experience should cover manufacture, production, design, accounting, banking, collection, audits and sales, which is most important. Position requires analytical, resourceful man able to keep his sales development in line with sound manufacturing development. Salary $5000-$8000. Location New York City. Z-78.

METALLURGICAL CHEMIST, first class, who understands chemistry of high-speed alloy steels, and has had at least five years' experience in steel industry. Electric-furnace experience also essential. Must be technical graduate. Work is chiefly in connection with production, but there will be some research involved. Man 28 to 30 years desired. Opportunity exceptional. Send complete information in first letter. Salary $3600-$4000. Location Cohoes, New York. Z-79.

INSTRUCTOR in mechanical drawing with two years' experience in teaching; some shop practice desirable, but not essential. Salary $1500-$2000 per year. Location Massachusetts. Z-80.

INSTRUCTOR in woodworking; should have shop experience and understand wood finishing. Two years' teaching experience required. Salary $1500-$2000 per year. Location Massachusetts. Z-81.

INSTRUCTOR in general chemistry; two years' teaching experience required. Salary $1500-$2000 per year. Location Massachusetts. Z-82.

MECHANICAL DRAFTSMAN with centrifugal pump experience. Location New York City. Z-26.

SALES ENGINEERS; mechanical or chemical engineering graduates with some sales experience if possible; with military service during the past war; and with a willingness to start at a moderate salary, with good prospects for advancement. The initial salary will be about $1800 for year. Headquarters Ohio. Z-85.

TECHNICALLY-TRAINED, EXPERIENCED EXECUTIVE to take charge of a plant manufacturing a line of electrical machinery, both a. c. and d. c. Must be thoroughly experienced along electrical manufacturing lines and be able to guide design as well. Location Chicago, Ill. Z-86.

LARGE MANUFACTURER OF POWER EQUIPMENT seeks general manager for rapidly growing plant employing approximately 5000 men. Must be thoroughly experienced executive, trained in intensive manufacturing. Location Chicago, Ill. Z-87.

DRAFTSMAN, experienced in heating and ventilation, for position with consulting engineer; duties will include some construction work. Salary $2000 per year. Location New York City. Also opening for recent mechanical graduate. Z-89.

DESIGNERS, experienced either in structural steel and reinforced-concrete industrial buildings, mechanical plant-layout work, or designing retorts and chemical machinery. Several men required for each of these lines. Location New York City. Z-90.

TOOL DESIGNER of jigs and fixtures for machine parts for position with company building presses for sheet metal work. Salary $45. Location Brooklyn, N. Y. Z-92.

MECHANICAL ENGINEER, capable of taking over management of machine shop making high class textile machinery. Exceptionally good opportunity for right man. Location Massachusetts. Z-94.

MAINTENANCE ENGINEER; with about 5 years' drafting experience; will be required to do some drafting as well as set up machines. Mature man desired. Salary $175-$200 per month. Location New Jersey. Z-95.

STRUCTURAL STEEL DETAILERS AND CHECKERS for positions in Bethlehem, Pa. Forty-four hour week. Good working and living conditions. Permanent positions. Application by letter. Z-96.

MACHINE DESIGNER; preferably one with experience on automatic machines of moderate size. Very desirable opening for right man. Dickinson Cord Tire Corporation, 250 West 54th Street, City. Ask for Mr. Cilley. Z-97.

MECHANICAL ENGINEER not over 30 years of age, for architect's office to act as liaison between architect's office and consulting engineer. Must be experienced in heating, ventilating, power plant and machinery layouts. Location New York City. Z-98.

ELECTRICAL DRAFTSMAN, familiar with layouts, wiring diagrams, etc., for mill and power-house work. Work consists of layout for steam and hydroelectric power plants, transmission line work, switchboard layouts, and distribution in mills. Capacity of work runs into thousands of kilowatts in some installations. Man who can make accurate calculations on electrical requirements, work up drawings, and trace them needed. Location New York City. Z-100.

INSTRUCTOR for 60-hour course on non-textiles to be given in training school for teachers of retail selling. Course must be non-technical in sense that it is not meant for work in any of these lines but for teachers of salespeople who must know their goods from the sales point of view. Location New York City. Z-101.

PURCHASING AGENT with engineering experience in all kinds of machinery and tools connected with export business. Salary $1800 plus per year Location New York City. Z-103.

ENGINEER to take charge of manufacturing plant making electrical-safety devices. Man who has had mechanical-engineering training desired. Location Detroit, Michigan. Z-105.

SOUTHERN UNIVERSITY wishes to appoint either full or an assistant professor in the department of mechanics to teach analytical mechanics and strength of materials beginning February 1. Thoroughly trained, energetic, enthusiastic man desired. Salary depends upon training and experience, but cannot exceed $3000 for present year. Location West Virginia. Z-106.

SUPERINTENDENT OF SHOPS and instructor in machine-shop practice, assistant in machine-shop practice, instructor in surveying and mechanician are desired, by southern university. Location West Virginia. Z-107.

YOUNG ENGINEER for rating and underwriting of automobile insurance risks for the United States. Must be willing worker, good at mathematics, agreeable and ambitious. Preferable that applicant know something about the various makes of automobiles. Location New York City. Z-108.

COMPRESSOR DESIGNER for full or spare time to help develop small high-speed and high-grade compressor; must know from actual practical experience all ins and outs connected with the manufacture of small compressors, cost, special tools and methods, etc.; liberal pay for expert assistance. Location New York City. Z-109.

SMALL D.C. GENERATOR DESIGNER, with knowledge of costs, sources of supply, manufacturing methods, and ability to complete electrical data, for full or part-time work. Must have practical experience. Man acquainted with brush arc-type machine preferred. Liberal pay for real expert. Location New York City. Z-110.

INDUSTRIAL ENGINEER; large firm of industrial engineers is constantly on lookout for qualified high grade men. They need not be technical graduates but it would be advantageous. Must have successful executive-manufacturing record and be experienced in organization, management, production control, incentives, manufacturing methods and processes stores control, employment and personnel work and have some knowledge of cost accounting. Should have practical knowledge of operation of machine tools, metal or woodworking or both. Men who have had experience as general managers, works managers, factory managers, superintendents, production managers, etc., are type desired. Applicant would be located in different localities for average of six months at a time. Salary commensurate with ability. Location Chicago, Ill. Z-111.

SUPERINTENDENT OF MAINTENANCE for foundry employing 1500 men, and making motor castings. Openings also for (a) plant engineer, and (b) designing engineer for new layouts, conveying machinery, and mill buildings. Location Michigan. Z-112-A-B.

INSTRUCTOR FOR HEAD OF CIVIL-ENGINEERING DEPARTMENT of a Southern University. Not less than thirty years old, with some experience both in teaching and practice, and having had a little graduate study in addition to degree from recognized engineering college. Appointments are permanent during good behavior and proper efficiency. Salary $2100 for 8½ months' work during the first year and $2300 per year thereafter. Location Florida. Z-113.

ENGINEER experienced in design of industrial concrete buildings, outside experience desirable but not essential. Location New York City. Z-114.

MECHANICAL ENGINEER with actual shop practice and experience in the design of automatic machinery. Location New Jersey. Z-115.

SALES ENGINEER: Young man, technical education, practical experience in operation of steam equipment essential; sales experience desirable, but not necessary. Chicago territory. In first letter give full particulars of education, experience, age, salary desired, etc. Also inclose photograph. Z-118.

FIRST CLASS GENERAL MECHANICAL DESIGNING DRAFTSMEN for power house and industrial plant work. Salary $250 to $275, according to ability. Location Connecticut. Z-120.

CHASSIS TESTER AND INSPECTOR for electric vehicles. Duties to be road testing, mechanical inspection and running in of electric vehicle chassis, as well as inspection of workmanship on chassis and bodies. Location Mt. Vernon, New York. Z-121.

AUTOMOBILE DESIGNER for work on automobile chassis. Experienced man desired, but recent graduate who is good draftsman will be considered. Location Mt. Vernon, N. Y. Z-122.

RESEARCH GRADUATE ASSISTANTSHIPS in Engineering Experiment Station of the University of Illinois are open to graduates of approved American and foreign universities and technical schools prepared to undertake graduate study in engineering, physics or applied chemistry. Appointment must be accepted for two consecutive collegiate years, at the expiration of which period if all requirements have been met, the degree of Master of Science will be conferred. Annual stipend $500. For additional information address: The Director, Engineering Experiment Station, University of Illinois, Urbana, Ill. Z-123.

INSTRUCTOR IN MECHANICAL ENGINEERING for the coming year at well known technical school. Location New York State. Z-124.

ASSOCIATE EDITOR for leading technical journal. Requirements: experience on power machinery, tact, judgment. Permanent position with advancement ahead. Give details of experience. Z-125.

DRAFTSMEN checkers, designers, detailers and estimators, with experience on railway rolling stock. Location New York City. Z-126.

DETAIL PLANT LAYOUT DRAFTSMAN with general experience, including building, piping, power plant and miscellaneous. Location New York City. Salary $200-$250. Z-127.

MECHANICAL DRAFTSMAN, experienced on designing of special machinery, tools, and fixtures. Experience should cover designing of machinery for automatic quantity production, for small interchangeable parts. In making reply please state age, nationality, married or single, experience, salary expected and how soon available. Location Connecticut. Z-128.

MECHANICAL ENGINEER between 25 and 30 years old, familiar with the design of power stations, preferably of large capacity. Excellent opportunity with this concern to any man of proper caliber. Location New York City. Z-129.

YOUNG GRADUATE MECHANICAL ENGINEER out of college a year or two, and bright enough to appreciate an opportunity when he sees it. Concern is willing to take such a man and train him in power-station design. Location New York City. Z-130.

FOUNDRY SUPERINTENDENT or general foreman on small gray-iron work. Foundry employs about 80 men. Location New York State. Z-131.

TIME AND MOTION-STUDY ENGINEER, with few years' experience for rate-setting work. Technical graduate, preferably in mechanical engineering desired. Location New York State. Z-132.

SUPERINTENDENT for reinforced-concrete factory building construction. Man with some knowledge of machinery desired. Location vicinity of Albany, New York. Z-133.

DESIGNER for crushing and concentrating machinery; must be capable of taking charge of squad. Location New York City. Z-134.

SALES ENGINEER; the largest manufacturer of certain automotive parts needs an experienced man for contact work with automobile manufacturers. Prefer college man with at least two years experience in automotive or mechanical engineering. All communications held strictly confidential. Z-200.

GROWING CONTRACTING CONCERN is badly in need of additional engineering help; men with ability, strength and pep and who can be trained to responsible positions in the organization. Experience essential in design and estimating of cost of reinforced concrete, mill buildings, or in steel and machinery layouts. State fully your experience. Headquarters New York City. Z-201.

MEN AVAILABLE

Only members of the Society are listed in the published notices of this section. Copy for notices should be on hand by the 12th of the month, and the form of notice should be such that the initial words indicate the classification. Notices are not repeated in consecutive issues.

ENGINEER OR ASSISTANT MANAGER; age 44; married; technical graduate; six months in charge of reinforced concrete work; six years assistant engineer in charge of office on tunnel work and inspector of tunnel construction and damaged buildings; eight years engineer and chief draftsman in capacity of production engineer in manufacturing in connection with civil and mechanical engineering work; at present engineer in mechanical development department of glass plant. SM-5048.

MECHANICAL AND ELECTRICAL ENGINEER; graduate both departments M. I. T.; five years' successful experience research and development work in connection with pressure gages, safety valves, force-feed oilers, carburetors and general brass goods, designing for economical manufacture and efficient performance. One year's experience in charge of all equipment in modern factory employing 1000. Capable of handling entire engineering, both plant and product. SM-5049.

MASTER MECHANIC; Assistant Superintendent or Superintendent. Thorough practical mechanic; up-to-date in modern ideas, shop management, handling help, etc. Machine shop or mills; 20 years' experience. SM-5050.

COMBUSTION ENGINEER; desires position in engineering or sales department; experienced burning oil under boilers high and low pressure; installing and testing stokers burning hard and soft coal; operating boiler tests and fuel saving investigations; age 29 years; graduate M. I. T. mechanical engineering course. SM-5051.

WORKS MANAGER OR SUPERINTENDENT; age 35; college training; experience locomotives, cars, boilers, contractors equipment, foundry, general manufacturing, contract work; at present employed but seeking opening in larger field. SM-5052.

GENERAL ENGINEER; civil, mechanical and electrical, Stevens graduate, Member A.S.M.E. 19 years. Twenty-five years' experience, can design and install any kind of plant, including electrical transmission line; familiar with oil production, metallurgy and agricultural development. Willing to go to Cuba or elsewhere for commensurate salary. Minimum salary in Texas, $300 per month. SM-5053.

WORKS OR PRODUCTION ENGINEER; age 36; technical education; last four years in charge of plant layout, equipment, and maintenance in large industrial concern; also installed and operated complete production control system during 1916, 1917 and 1918. Desires connection in Philadelphia or vicinity. Employed, but available March 1. SM-5054.

ASSISTANT PRODUCTION OR EXECUTIVE ENGINEER; technical graduate in industrial engineering; age 26; over 2½ years' broad general experience as assistant engineer in large manufacturing plant; experienced in organization and production, factory routine, inspection and testing for economical use of materials and equipment. Minimum salary $2500. SM-5055.

MECHANICAL ENGINEER; Columbia graduate, age 27, seeks opportunity with efficiency or industrial engineer. Practical, progressive, economical, possessing tact, executive ability, initiative, and otherwise fitted by nature and training for efficiency work. Experience includes construction work, care and operation of electrical and mechanical equipment, and all departments of large electric-light company. SM-5056.

GRADUATE MECHANICAL ENGINEER; age 25, desires position with consulting engineering firm; has had 2 years' experience with and is at present employed by reliable boiler concern on manufacture, testing and experimental work. SM-5057.

PRODUCTION ENGINEER; graduate mechanical engineer, Columbia University, as assistant to executive of large progressive manufacturing concern located in or within commuting distance of New York City. Experience includes production, erection, testing, inspecting and research work. Minimum salary, $4000 to start. Details given in personal interview. SM-5058.

MANAGER AND ENGINEER; with broad experience in machinery development and production also in factory and general management; has satisfactorily sold his machine manufacturing business, of which he has been president and general manager for ten years. Technical graduate. SM-5059.

WORKS ENGINEER; age 28, open for engagement with progressive organization; has had exceptional exeperience on design work such as machine tools, development work, industrial layout, plant efficiency and maintenance, as designer, and as executive in charge. College education. Location immaterial. SM-5060.

MECHANICAL ENGINEER; age 24; M. E. degree; experience, one year in power-plant operation, one year as engineering officer in U. S. N.; six months with consulting engineer designing and drafting along mechanical and industrial lines; desires position with industrial or manufacturing concern in any capacity to break into production engineering. Location anywhere, preferably vicinity N. Y. C. SM-5061.

MECHANICAL ENGINEER; technical graduate 1915; age 26; experienced on interchangeable design of automobile electrical equipment and light ordnance; experimental engineer or development of small arms and ammunition, having had responsible charge of manufacture and proving of this material; desires position along executive lines, or as experimental or production engineer. Employed at present. SM-5062.

MECHANICAL ENGINEER; technical graduate. Six years' practical experience covering machine-tool design, production, and installation; marine and stationary power-plant and sugar-mill design, construction and operation. Sales and cost keeping; desires permanent connection with exporting firm in the U. S. A. English, Spanish, French, and German spoken and written; available February 15, 1920. SM-5063.

MECHANICAL AND PLANT ENGINEER; American, age 33, married; 13 years' practical experience in general plant maintenance and construction, design of machinery and buildings, factory layouts and general equipment work; special training in manufacture of brass and copper sheets, rods, tubes, wires, insulated wires and cables. Executive. A-1 references. Salary depends on position. SM-5064.

CHIEF ENGINEER AND MASTER MECHANIC; 19 years' practical experience in steam and electric-power plants, textile machinery and central stations. Lieut. Mass. 1st Engineers. Location—immaterial. SM-5065.

MECHANICAL SUPERINTENDENT; technical graduate with 11 years' experience as maintenance engineer and power superintendent. Experience with a. c. and d. c. electrical equipment; foundry, machine shop, wood working, press and textile machinery. Location—East. SM-5066.

MECHANICAL ENGINEER; who intends to visit Switzerland during months of April and May would be glad to undertake any special missions in Switzerland or neighboring states for American concerns. SM-5067.

INSTALLATION-SERVICE MANAGER; American, married, age 41, practical mechanic and graduate in mechanical engineering, now employed, desires position with larger organization which manufactures and installs machinery, preferably automatic, operating skilled erector-mechanics. Has had selling, sales engineering and works-managing experience and has specialized in organizing and operating installation service work to reduce usual heavy road expenses. Available after satisfactory notice present company. SM-5068.

PETROLEUM AND MECHANICAL ENGINEER; ten years' experience in California and Mid-Continent oil fields as chief draftsman, superintendent of construction and consulting engineer on oil-pipe lines, topping plants, gasoline plants, and refineries. Capable to take charge of designing, estimating and constructing of similar work. Executive and organizing ability. SM-5069.

MECHANICAL ENGINEER of large railroad wants change to position paying salary commensurate with his ability and experience. Has had long experience in design, testing and improvement of locomotives, cars, etc. In full charge of all designing, etc., for past ten years. SM-5070.

SALES ENGINEER, ARCHITECT: Harvard graduate; married; age 40; ten years' practicing architect and engineer Philadelphia; especially familiar with flour and grain-milling machinery and construction and mechanical work of buildings. Recent Major infantry. Owing to loss of partner in war is available as sales engineer or executive in engineering work for which he feels himself best suited. Permanent position desired; would consider investing. Knowledge French, Italian; would go abroad, but East (New England) preferred. SM-5071.

ELECTRO-MECHANICAL DEVELOPMENT ENGINEER: Nine years' experience with induction apparatus and ignition systems, desires permanent connection; member A.I.E.E. and assoc.-member A.S.M.E. Salary about $5500. SM-5072.

SALES ENGINEER: six years' experience in selling high-grade machinery. Location immaterial. Would consider agency. SM-5073.

ENGINEER: with broad exeperience in manufacture, design and application of centrifugal hydro-extractors invites correspondence from manufacturers interested in that line. Would consider position of large responsibility only. SM-5074.

INDUSTRIAL ENGINEER: technical graduate; age 30; six years' experience designing heavy machinery, labor-saving and safety devices, power plants, piping, heating and ventilating and estimating; two and a half years of efficiency work; thoroughly familiar with planning, scheduling, routing, time study and cost accounting, neat and accurate draftsman, with present firm 2½ years, desires change. Location—immaterial. SM-5075.

MARINE CONSULTING ENGINEER: works manager, American, age 36, with 16 years' experience in shipbuilding, exceptionally qualified in ship design, construction and engineering (including Diesel oil engines, steam and gasoline engines, turbines, reduction gears, boilers, screw propellers, pumps and engine-room auxiliaries) is open for contract. Minimum salary, $7500 per annum. SM-5076.

GRADUATE MECHANICAL ENGINEER: age 25; two years' experience in shop and two and one-half years' executive experience. Now holding position in production department at Government plant. Desires position with private concern offering good opportunities for advancement. SM-5077.

CONSTRUCTION ENGINEER: 12 years' experience as designer and superintendent of construction on factory buildings. For past six years with large tractor plant in charge of construction and maintenance work. Familiar with metal and wood-working plant, paper mills, plans, specifications and superintendence of construction. Age 40; married; good health; technical education; member A.S.M.E. References furnished; salary $3600. SM-5078.

WORKS MANAGER OR ASSISTANT TO GENERAL MANAGER: 20 years' practical experience as mechanic from apprentice to executive covering manufacture of small electrical machinery and general line of small tools. Past 13 years in executive capacity; broad knowledge of office work, including organization, planning and routing, bonus plans and cost-accounting practicee. Age 37; married; location—New England; salary $5000. SM-5079.

CHIEF DRAFTSMAN OR ASSISTANT CHIEF ENGINEER: graduate in mechanical and civil engineering; age 31; married; six years in drafting room, as detailer, layer out, checker, chief draftsman and mechanical engineer. Past two years as executive and consulting engineer on airplane equipment. Expert machine designer, power units, power accessories, special and standard machinery and instruments of precision. SM-5080.

MECHANICAL ENGINEER: technical graduate 1911; experienced in power-gas producer, and plant-equipment layout, purchase, installation, and maintenance. Machine and heat-treatment furnace design. Reports on projects costs and savings. Desires maintenance or sales position. At present employed in executive work. Married. Location—Philadelphia, Wilmington, or vicinity. Salary, $3000 per annum. SM-5081.

MANAGERIAL EXECUTIVE OR PRODUCTION MANAGER: age 40; married; 15 years' experience in plant management, including production, plant engineering, plant layout, construction, maintenance, welfare and safety. Have recently completed supervision of complete design and layout of large automobile plant for high-grade automobiles now under construction; available January 1, 1920. Detroit location preferred. High-grade references furnished. SM-5082.

GRADUATE MECHANICAL AND INDUSTRIAL ENGINEER; age 35; administrative experience; plant design and construction; at present employed, available about March 1, 1920; 9 years' active experience field and office covering power and pumping plants, locks, dams, hydraulic machinery, steam and gas-engine installation; preparation of specifications and estimates; procural of engineering supplies and material. Two years in War; discharged as Capt. of engineers; suitable position or connection with large industrial or contracting firm, or office of consulting engineer desired; preferably Pacific Coast or Intermountain States; can invest limited amount in soundly-established business, or would consider commercial agency. Minimum salary $3000.00. SM-5083.

MECHANICAL SPECIALTY ENGINEER; age 30; married; 15 years' general experience in steel plants from machinist to assistant master mechanic and superintendent of department producing agricultural-machinery parts, assistant chief expediter and inspector of machinery and equipment; field and utility man for engineer in charge of 25-million-dollar improvement work. At present employed in last position, having filled it for 15 years. Minimum salary $3300.00. Can furnish best of references. SM-5084.

GRADUATE MECHANICAL ENGINEER; age 25; married; desires position with opportunity, preferably in research and experimental work. Experience before the War in experimental, also inspection and testing work with automobile manufacturers. Y. M. C. A. secretary during War, and teacher in high-school mathematics department at present. SM-5085.

MECHANICAL ENGINEER; age 45; technical graduate; with broad experience; good organizer; had charge of large forces of engineers, mechanics and necessary labor for organization in designing, constructing, equipping and operating large plants, steam, electric and hydraulic power plants; mills; machine shops; foundries; brickyards; concentrating plants; smelters; sample mills; with most modern design and machinery. SM-5086.

MECHANICAL ENGINEER: three years' experience with boilers and steam machinery; six months on marine oil-engine tests; ex-Navy engineer officer; age 24; married; wishes employment with engineering firm with opportunity for sales work, preferably in vicinity of New York City. SM-5087.

MECHANICAL ELECTRICAL SALES ENGINEER; age 39; married; eighteen years' practical engineering experience and technical training; five years' sales engineer, 13 designing, construction and maintenance of rolling mills, power plants, central station, pole-line work, by-product coke, water and general engineering works. Four years with present company as superintendent of construction and maintenance. Diversified engineering experience, proven commercial and executive ability; furnish substantiating reference. Would not

object to working abroad; minimum salary, eight thousand dollars. SM-5088.

ENGINEER; 20 years' experience with industrial-plant construction; steam-electric power installations; economy in generators and use of high and low-pressure steam and all mechanical equipment of complete manufacturing plants. Desires responsible position with industrial firm to take charge of construction; power installation; repair; rearrangement and maintenance of plant. SM-5089.

MECHANICAL ENGINEER AND ACCOUNTANT; desires connection with "live" industrial engineering organization. Experienced in cost accounting, production, planning and scheduling estimating; construction work and executive work in manufacturing. Interested in making connection with future possibility of becoming member of firm. Age 31; married. At present employed as assistant to chief executive; minimum salary $4000. SM-5090.

EXECUTIVE ENGINEER; over ten years' experience on construction, maintenance operation; sales, and management of hydro-electric concerns, covering generation, transmission, and distribution of voltages from 110 to 60,000. Location—Chicago or Europe. SM-5091.

GENERAL SUPERINTENDENT OF PLANT; engaged on light electro-mechanical product (mass production) wishes to change; large experience as engineering executive covering precision manufacturing; medium and heavy classes of work; very successful organizing working force, handling men and equipping for manufacturing. Especially interested in propositions covering new business where management is needed. Greater N. Y. or vicinity preferred, but would go anywhere. Salary minimum $7500.00. SM-5092.

ASSISTANT FACTORY MANAGER; at present supervising mechanical engineer with well known manufacturer of material-handling machinery. Eleven years' experience in machine-shop, engineering department and factory management, Stevens graduate; age 32. SM-5093.

INDUSTRIAL ENGINEER; twelve years' experience in design, construction, maintenance and operation of manufacturing and power plants and their equipment; thoroughly familiar with most modern methods and equipment of forge, foundry, machine and assembly shops for wide variety of products; technical graduate, married, age 33, now employed. SM-5094.

MECHANICAL ENGINEER; Worcester Polytechnic Institute graduate 1915, age 28, married. Four years' experience in general engineering work in both shop and drawing room. At present employed. Desires position with opportunities for advancement to the right man. Location Eastern States. SM-5095.

MECHANICAL ENGINEER; speaks fluently French, Spanish and German. Experienced sales engineer and designer of conveying and hoisting machinery. SM-5096.

PROFESSOR OF MECHANICAL ENGINEERING; now head of a department in a state university, wants a position in an eastern or western university. Object, change of climate. SM-5097.

DREDGING SUPERINTENDENT; high-grade civil and mechanical engineer, with twenty years' practical experience in design, construction and operation of all types of dredging plant and floating equipment, desires position as superintendent or manager with dredging or marine contractor. Has successfully executed many large projects both on inland and tidal waters. SM-5098.

TECHNICAL GRADUATE, at present employed; sales and engineering experience with underfed and traveling grate stokers; familiar with general plant engineering and design: purchasing and export experience. SM-5099.

CANDIDATES FOR MEMBERSHIP

TO BE VOTED ON AFTER FEBRUARY 18, 1920

BELOW is a list of candidates who have filed applications since the date of the last issue of MECHANICAL ENGINEERING. These are arranged geographically. Applications for change of grading are also posted. The total number of applications received and listed below is 149.

The Membership Committee, and in turn the Council, urge the members to scrutinize this list with care and advise the Secretary promptly of any objections to the candidates posted. All correspondence in this regard is strictly confidential. Unless objection is made to any of the candidates by Feb. 18, 1920, and provided satisfactory replies have been received from the required number of references, they will be balloted upon by the Council.

NEW APPLICATIONS

California

HILTON, HAROLD R., Manager, Main Street Company, Los Angeles
JARDH, WILHELM, Chief Draftsman & Designer, Akelson Machine Co., Los Angeles
ROBINSON, SAMUEL M., Fleet Engineer, Commodore U. S. Navy, U. S. S. New Mexico, San Francisco

Colorado

BAUER, FRANK S., Associate Professor Mechanical Engineering, University of Colorado, Boulder

Connecticut

BOYLAND, WALTER A., Engineer, Columbia Graphophone Co., Bridgeport
DEGENER, GUSTAVE O., Factory Superintendent, Underwood Computing Machine Co., Hartford
FRY, WINTHROP H., Chief Engineer, E. W. Carpenter Manufacturing Co., Bridgeport
GENEST, HOMER A., Designer for Lorenz & Lorenz, Hartford
HART, THOMAS G., Sales Engineer, The Terry Steam Turbine Co., Hartford
INFIORATI, MATTEO E., JR., Chief Engineer, J. N. Lapointe Co., New London
MALKOWSKI, FELIX J., Draftsman, Ashcroft Manufacturing Co., Bridgeport

Delaware

BRUBAKER, WALTER S., Engineer, Hercules Powder Co., Wilmington
DE VIGNIER, ROBERT M. Mechanical Experimental Engineer, E. I. duPont de Nemours & Co., Wilmington
MATTINGLEY, GEORGE B., Assistant Sales Manager, Edge Moor Iron Co., Edge Moor

District of Columbia

FOCARDI, PIER L., Captain, NCNY Representative, General Staff College, Washington
MUNROE, ED. K., Assistant Chief Mechanical Engineering, Hospital Section, U. S. Treasury, Washington
SCOTT, WALTER C. JR., Draftsman, Washington Navy Yard, Washington

Georgia

COOK, JAMES C., Vice President and Assistant General Manager, The J. B. McCrary Co., Atlanta
SAGO, HAMILTON R., Engineer, General Fire Extinguisher Co., Atlanta
YOPP, PAUL R., Sales Engineer, Worthington Pump & Machinery Corp., Atlanta

Illinois

BLACK, FRED E., Internal Combustion Engine Designer, Root & Vandervoort Engineering Co., Moline
CANAVAN, WILLIAM F., Vice President and Superintendent, Leader Iron Works, Decatur
MOHR, ARLINGTON G., Sales Engineer, Joseph T. Ryerson & Son, Chicago

Indiana

KING, CHARLES E., Chief Draftsman, Link Belt Co., Indianapolis

Kentucky

COVERT, HOMER L., Chief Engineer, Dow Wire & Iron Works, Louisville

Maryland

KUEHNER, ARTHUR P., Mechanical Assistant, Baltimore & Ohio R. R., Baltimore

Massachusetts

BAKER, ROBERT L., Engineer and Representative, Pierce, Butler & Pierce. Boston
DAY, RALPH R., Engineer, W. E. Tillotson Manufacturing Co., Pittsfield
ELLIS, GERSHOM P., Sales Engineer, F. A. Mazzur & Co., Boston
FAIRMAN, SEIBERT, Computer, General Electric Co., Lynn
FRANCIS, THAYER, Sales Engineer, Parks, Cramer Co., Boston
FRARY, GEORGE H., Owner and Manager, Frary Manufacturing Co., Charlemont
GREENE, CHARLES E., Mechanical Engineer, E. B. Badger & Sons Co., Boston
MARCALUS, NICHOLAS, Designing Engineer, Manning, Maxwell & Moore of N. Y., at Putnam Machine Works, Fitchburg
MARSHALL, LAWRENCE P., Research Department, Norton Co., Worcester
PEASE, GILES S., Plant Engineer, Webster St. Works. Clinton-Wright Wire Co., Worcester
PIRNIE, WARREN B., Manager, Pierce, Butler & Pierce Manufacturing Corp., Boston
SIMCOCK, JOHN H., Master Mechanic, E. B. Badger & Sons Co., Boston
WARE, CHARLES L., Engineer, Steam & Water Power Department, American Woolen Co., Lawrence
WHEATON, EGBERT A., Construction Superintendent, The Lamson Co., Boston

Michigan

COLE, RALPH A., Efficiency Engineer, Hayes Wheel Co., Jackson
GARMAN, WARREN DEW., Designer (General Design), General Motors Corp., Detroit
HALL, ALEXANDER D., Mechanical Engineer, Ford Motor Co., Detroit
HOOK, IRA T., Staff Engineer, General Motors Corp., Detroit
HOYT, HOMER J., Chief Engineer, Morgan & Wright, Detroit
LUPFER, THEOPHILUS M. R., Production Foreman, Ford Motor Co., Detroit
ROBERTSON, LESLEY C., Tool Designer, Ford Motor Co., Detroit
WILSON, CLYDE E., Professor of Mechanical Engineering, University of Michigan, Ann Arbor

Missouri

KLEE, WILLIAM A., Mechanical Engineer, Monsanto Chemical Works, St. Louis

New Hampshire

BALL, LESTER W., Marine Draftsman, U. S. Navy Yard, Portsmouth

New Jersey

HENSEL, SIEGFRIED R., Draftsman, The Babcock & Wilcox Co., Bayonne
HULETT, JOSEPH L., Engineer, Dover Boiler Works, Dover
LUDERS, RICHARD E., The Texas Co., Bayonne
MCCARTHY, JOHN P., Mechanical Draftsman, George White, Jersey City
MELICK, NEAL A., Engineer of Plant, Construction & Maintenance, Submarine Boat Corp., Port Newark
PARSONS, MUNROE H., Apprentice Engineer, Babcock & Wilcox Co., Bayonne
RUFF, HERBERT, Assistant to Superintendent, N. Y. Shipbuilding Corp., Camden
SEELY, LESLIE T., Machine Draftsman, Gould & Eberhardt, Irvington
SPAULDING, FENTON J., President, Spaulding Chain Corp., Bloomfield

New York

CLINCH, CHARLES G., Plant Engineer, National Paper Products Co., Carthage
COOK, JOHN W., Engineer, G. H. Lynen & Co., New York
DALTON, Howard H., Mechanical Engineer, American Sugar Refining Co., New York
DAVIS, E. W., Assistant District Engineer, Westinghouse Air Brake Co., New York
DUNCAN, LEONARD R., Outside Superintendent, Morse Dry Dock & Repair Co., Brooklyn
FORD, LOUIS R., Engineer, Worthington Pump & Machine Corp., New York
GREENWOOD, JOSEPH R., Mechanical Engineer, Office of Charles G. Higgins, New York
HILDEBRAND, H. EDWARD, Assistant Chief Engineer, Newburgh Shipyards, Inc., Newburgh
JAEGER, MAX, Designing Engineer, Anchor Cap & Closure Corp., Brooklyn
JAQUES, RUSSELL, Raymond Concrete Pile Co., Co., New York
JONES, SPENCER A., Technical Advertising, Newell-Emmett Co., New York
KINCAID, RUSSELL McW., Works Manager, American Eveready Works of National Carbon Co., Inc., Long Island City
KRAFT, CARL, Engineer, Murphy Door Bed Co., New York
LIEBOWITZ, BENJAMIN, Chief Engineer, Monidyne Vehicle Suspension Co., New York
McFARLIN, CHARLES K., Master Mechanic, The Barrett Co., New York
MORT, WILLIAM, Engineer, Singer Manufacturing Co., New York
MORTIMER, JAMES D., President, The North American Co., New York
NAYLOR, GEORGE M., Manager Transmission Division all branches of The Fairbanks Co. New York
OLSEN, GUSTAV E., Sales Engineer, Fitzgibbons Boiler Co., New York
ORPIN, FRANCIS W., New York
PRADO, JOSE DE J., Manager, Machinery Department, Melchior, Armstrong & Desseau, Inc., New York
RICHARDSON, HENRY A., Operating Engineer, Standard Textile Products Co., New York
SCHILLING, PETER G., Sales Engineer, H. S. Johannsen, New York
SIMPSON, JAMES A., General Machinist, New York Navy Yard, Brooklyn
SINSHEIMER, WARREN A., Head of Oil Production Department, Henry L. Doherty & Co., New York
SMITH, ROBERT F., Mechanical Engineer, Knickerbocker Ice Co., New York
STAIGER, WILLIAM, Assistant Superintendent, Rosemar Engineering Co., New York
STERNBERGER, ROBERT O., Mechanical Engineer, Tidewater Paper Mills Co., Brooklyn
WEAVER, ERNEST W., Engineer, Surface Combustion Co., New York
WOEHRLE, ERNEST A., Assistant Engineer of Tests, U. S. Navy Department, Hull Division, Navy Yard, New York

Ohio

CUTTER, EDMUND I., Superintendent of Development Department, The American Laundry Machinery Co., Norwood
DRAKE, JOHN L., Machine Designer, Defiance Machine Works, Defiance
ELSTAD, ERNEST C., Special Representative for R. K. LeBlond Machine Tool Co., Cincinnati
FITZGERALD, JOSEPH A., Industrial Engineer, Firestone Tire & Rubber Co., Akron
HARTWICK, LOUIS M., Furnace Engineer, The Frazier-Sheal Co., Cleveland
HASKINS, MANLY K., Safety Engineer, American Ship Building Co., Cleveland
HUNTSBERGER, RUSSELL C., Master Mechanic, The American Rolling Mill Co., Middletown
JOHNSON, JOHN T., Works Manager, The Portage Rubber Co., Barberton
KIEFER, CARL J., Member Reliance Engineering Co., Cincinnati
RAE, FRANK B., Consulting Engineer, Cleveland

Oklahoma

PECK, EDWARD L., Head of Gas & Gasoline Division of Construction Department, Empire Companies. Bartlesville

Pennsylvania

AGEE, HOWARD H., Consulting Engineer, Dr. Thomas Conway, Jr., Allentown
BETZ, ALBERT C., Mechanical Draftsman, Bovaird & Seyfang Manufacturing Co., Bradford
HOWEL, WILLIAM G., Technical Apprentice, Westinghouse Electric & Manufacturing Co., E. Pittsburgh
HUBBELL, HENRY W., Personnel Engineer, Leeds & Northrup Co., Philadelphia
JIMERSON, FRANCIS A., Chief Engineer, Ingersoll-Rand Co., Athens
LARSON, LLOYD E., Assistant Superintendent, Frankford Arsenal, Philadelphia
MORRIS, WILLIAM C., Designer, Pittsburgh Crucible Steel Co., Pittsburgh
OPINSKY, JOHN E., Technical Apprentice, Westinghouse Electric & Manufacturing Co., E. Pittsburgh
PANGBORN, ROBERT G., Sales Engineer, Alberger Pump & Condenser Co., Philadelphia
WYNKOOP, ALFRED H., President & Manager, Advance Machinery Co., Philadelphia

Rhode Island

DANIELS, JOHN H., Chief Engineer, Revere Rubber Co., Providence
RAWLINGS, FREDERICK G., Mechanical Engineer, Revere Rubber Co., Providence

Virginia

LEWIS, SAMUEL H., Inventor & Manufacturer, Richmond

West Virginia

SALISBURY, FRANK W., Superintendent, Parkersburg Rig & Reel Co., Parkersburg
WALLBANK, ERNEST W., Superintendent, Parkersburg Rig & Reel Co. Parkersburg

Wisconsin

BURNS, WILLIAM H., Secretary & Assistant Manager, Valley Iron Works Co., Appleton
LINDSTROM, ARTHUR W., Mechanical Engineer, Cudahy Brothers Co., Cudahy

Canada

ARKWRIGHT, REUBEN, Assistant Chief Engineer, The Eastern Car Co., Ltd., New Glasgow, N. S.
BOATE, GERALD A., Superintendent of Industrial Training, Vocational Branch Department, Soldiers' Civil Re-Enlistment, Ottawa
BUCHMAN, LOUIS, Assistant Superintendent, Commonwealth Chemical Corp. of Canada, Ltd., Walkeville, Ontario
HENTHORN, ARTHUR L., Master Mechanic Canadian Consolidated Rubber Co., Montreal
NEEDHAM, ROBERT J., Mechanical & Electrical Engineer, Grand Trunk Railway System, Montreal, Quebec
NEWILL, GEORGE E., Engineer in Charge of Turbine & Engine Department, Dominion Bridge Co., Ltd., Montreal
STADLER, JOHN, Assistant Manager & Engineer, Belgo Canadian Pulp & Paper Co., Showinigan Falls, Quebec

Canal Zone

TOWER, GILBERT S., Mechanical Engineer, The Panama Canal, Mechanical Division, Department of Operation, Balboa

France

PETITJEAN, CHARLES P., Engineer, Ingersoll-Rand Co., Paris
WARREN, FRANCIS W., Consulting Engineer (Paper Mill Work), Paris

Italy

GALEAZZI, ROBERTO, President of Soc. An. H. Gio Ansaldo & Co., Genoa

Peru

CULLEN, CHARLES R., Sales Representative, Baldwin Locomotive Works, Lima

CHANGE OF GRADING

PROMOTION FROM ASSOCIATE MEMBER

Connecticut

HALLAM, MARK J., Engineer, Bridgeport Brass Co., Bridgeport

Missouri

BUFORD, EDWIN H., Assistant Chief Engineer, Monsanto Chemical Works, St. Louis

New Jersey

COUCH, FREDERICK F., Associate Professor. Rutgers College, New Brunswick
MURPHY, JOHN, JR., Superintendent United Piece Dye Works, Lodi

New York

GORDON, LEO A., Chief Engineer, Fred T. Ley & Co., Inc., New York
PULLER, OTTO G., Co-partner, Pull-man Engineering Service, New York
WOLLHEIM, WALTER E., President & Mechanical Engineer, Alloy Foundry & Machine Corp., New Rochelle

Pennsylvania

JOHNSTON, ROBERT B., Superintendent Metal Division, Naval Aircraft Factory, Philadelphia
REBBEKE, ERNEST A., Head, Purchase, Production, Inspection & Warehousing, U. S. S. Emergency Fleet Corp., Philadelphia
WEILER, RUDOLPH B., Factory Manager & Purchasing Agent, Sharples Separator Co., West Chester

PROMOTION FROM ASSOCIATE

New York

GOULD, WILLIAM S., President, Fuel Engineering Co. of N. Y., New York

PROMOTION FROM JUNIOR

Connecticut

NICKERSON, JOHN W., Industrial Engineer, Cheney Brothers, So. Manchester

Michigan

GUSTAVUS, CHARLES W., Engineer, Construction Department, The Detroit Edison Co., Detroit

Missouri

HOWES, RAY L., Manager Machine Department, Fairbanks, Morse & Co., St. Louis

New Jersey

JEALOUS, ARTHUR R., Assistant Works Superintendent, Clark Thread Co., Newark

New York

HORNE, CALEB L., Lubrication Engineer, The Texas Co., New York
NEIL, EDMUND B., Assistant Truck Engineer, Pierce Arrow Motor Car Co., Buffalo
REYNOLDS, JAMES J., Systematizing, H. L. Gantt, New York
ROSENTHAL, EMANUEL, Mechanical Engineer, Sen-Jacq Film Print Co., Brooklyn
WASILKOWSKI, FELIX J., Experimental Engineer, Tuttle & Bailey Manufacturing Co., Brooklyn

SUMMARY

New Applications	129
APPLICATIONS FOR CHANGE OF GRADING:	
Promotion from Associate-Member	10
Promotion from Associate	1
Promotion from Junior	9
Total	149